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Windsor Air Quality Study
L'étude sur la qualité de l'air de Windsor

Windsor Air Quality Committee | Comité sur la qualité de l'aír de Windsor

Ambient Air Monitoring Activities

REPORTS OF THE WINDSOR AIR QUALITY STUDY

1: Windsor Air Quality Study : Executive Summary
2: Windsor Air Quality Study : Emission Inventory for Windsor/Detroit Airshed
3: Windsor Air Quality Study : Air Monitoring Activities
4: Windsor Air Quality Study : TAGA 6000 Survey Results
5: Windsor Air Quality Study : Personal Exposure Survey Results
6: Windsor Air Quality Study : Soil and Garden Produce Survey Results
7: Windsor Air Quality Study : Mathematical Modelling/Source Apportionment
8: Windsor Air Quality Study : Health Effects Assessment
9: Windsor Air Quality Study : Plain Language Summary

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WINDSOR AIR QUALITY STUDY:

AMBIENT AIR MONITORING ACTIVITIES

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WINDSOR AIR QUALITY STUDY:

AMBIENT AIR MONITORING ACTIVITIES

Report prepared by:

P. Steer
Atmospheric Studies Section
Science and Technology Branch
Ontario Ministry of Environment and Energy

Report prepared for:

Windsor Air Quality Committee

For further information, please contact:

MOEE Windsor District Office
6th Floor, 250 Windsor Avenue
Windsor, Ontario
N9A 6V9

Phone (519) 254-2546
Facsimile(519) 254-5894

Contents . . .

List of Tables
List of Figures
Acknowledgements
Glossary and Acronyms
Executive Summary

1 Introduction 1
1.1 Background 1
1.2 Study Objectives 2

2 Target Compound List 4
2.1 Rationale for Selection 4
2.2 Sampling and Analytical Methods 5

3 Monitoring Sites and Length of Data Record 10
3.1 Canadian 10
3.2 American 11

4 Data Limitations 13
4.1 Data Quality 13
4.2 Handling Non-detects 14
4.3 Inter-Agency Comparisons 15
4.3.1 MOEE vs EC 15
4.3.2 ECC&P vs WESTON 16

5 Results 17
5.1 Metals 17
5.2 Volatile Organic Compounds 43
5.3 Chlorophenols, Chlorobenzenes & Polychlorinated Biphenyls 63
5.4 Polycyclic Aromatic Hydrocarbons 81
5.5 Dioxins and Furans 116

6 Discussion 135
6.1 Ambient Air Quality Criteria 135
6.2 Windsor Results Compared With Other Urban Areas 138

7 References 150

List of Tables . . .

TABLE I	Target compound list for the ambient air monitoring portion of the Windsor Air Quality Study	4
TABLE II	Ontario Ministry of Environment and Energy Ambient Air Monitoring Protocols	6
TABLE III	Environment Canada Ambient Air Monitoring Protocols	7
TABLE IV	Roy F. Weston Inc. Ambient Air Monitoring Protocols	8
TABLE V	Michigan Department of Natural Resources Ambient Air Monitoring Protocols	9
TABLE VI	Summary Statistics for Cartridge (MOEE) vs Canister (ECC&P) Sampling	16
TABLE VII	MOEE Windsor Metals (ng/m^3) From TSP	18
TABLE VIII	Metals Data: All Windsor Sites 1988-1991 Combined	30
TABLE IX	Arithmetic Mean for Five Years of Metals Monitoring in the Detroit Area	32
TABLE X	Summary Statistics for Metals Monitored by Roy F. Weston Inc.; Playground Site	33
TABLE XI	Arsenic & Beryllium (ng/m^3) at 12007 and 12008	35
TABLE XII	Metals from PM10 - MOEE	36
TABLE XIII	Metals from PM10 - ECC&P	41
TABLE XIV	Summary Statistics for Volatile Organic Compounds: Windsor	44
TABLE XV	Average Concentration of Volatile Organic Compounds: Detroit	58
TABLE XVI	Summary Statistics for Volatile Organic Compounds: Walpole Island	59
TABLE XVII	Chlorophenols: Windsor - ECC&P	64
TABLE XVIII	Chlorophenols: Detroit - Roy F. Weston	66
TABLE XIX	Chlorophenols: Walpole Island - ECC&P	67
TABLE XX	Chlorobenzenes: Windsor - ECC&P	68
TABLE XXI	Chlorobenzenes: Detroit - Roy F. Weston	70
TABLE XXII	Chlorobenzenes: Walpole Island - ECC&P	71
TABLE XXIII	Polychlorinated Biphenyls: Windsor - ECC&P	72
TABLE XXIV	Polychlorinated Biphenyls: Detroit - Weston: Playground Site	77
TABLE XXV	Polychlorinated Biphenyls: Detroit - Weston: Background Site	79
TABLE XXVI	Polycyclic Aromatic Hydrocarbons: Windsor	82
TABLE XXVII	Polycyclic Aromatic Hydrocarbons: Detroit	104
TABLE XXVIII	Polycyclic Aromatic Hydrocarbons: Walpole Island	110
TABLE XXIX	Toxicity Equivalency (TEQ) Calculation	116
TABLE XXX	Dioxins and Furans: Windsor	117
TABLE XXXI	Dioxins and Furans: Walpole Island	127
TABLE XXXII	Dioxins and Furans: Detroit	131
TABLE XXXIII	Long-Term Monitoring Statistics Compared To 24 Hour Ambient Air Quality Criteria	136
TABLE XXXIV	Long-Term Monitoring Statistics Compared To Annual Ambient Air Quality Criteria	137

List of Figures . . .

FIGURE 1 Air Toxics Monitoring Activities in the Windsor/Detroit Area 12
FIGURE 2 Range of Annual Averages of Benzene Concentrations 141
FIGURE 3 Range of Annual Averages of 1,3-Butadiene Concentrations 142
FIGURE 4 Range of Annual Averages of Benzo(a)Pyrene Concentrations 143
FIGURE 5 Range of Annual Averages of Cadmium Concentrations 144
FIGURE 6 Range of Annual Averages of Chromium Concentrations 145
FIGURE 7 Range of Annual Averages of Formaldehyde Concentrations 146
FIGURE 8 Range of Annual Averages of Carbon Tetrachloride Concentrations 147
FIGURE 9 Range of Annual Averages of para-Dichlorobenzene Concentrations . . . 148
FIGURE 10 Range of Annual Averages of Total Dioxin Plus Total Furan Concentrations 149

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Glossary and Acronyms . . .

Agencies/Programs

MOEE	Ontario Ministry of Environment and Energy (formerly the Ontario Ministry of the Environment)
ECC&P	Environment Canada Conservation and Protection
USEPA	United States Environmental Protection Agency
MDNR	Michigan Department of Natural Resources
WCAPCD	Wayne County Department of Health Air Pollution Control Division
IJC	International Joint Commission
GDRRA	Greater Detroit Resource Recovery Authority
UTAMP	Urban Toxics Air Monitoring Program (a USEPA initiative)

Sampling/Analytical

Hi-Vol	High volume air sampler
Lo-Vol	Low volume air sampler
XAD	Polymeric resin used to trap vapour phase compounds
PUF	Polyurethane foam use to trap vapour phase compounds
AA	Atomic Absorption
AAS	Atomic Absorption Spectrometry
AS	Atomic Spectroscopy (MDNR acronym)
GC/FID	Gas Chromatography/Flame Ionization Detector
GC/MSD	Gas Chromatography/Mass Selective Detector
GC/MS/MS	Gas Chromatography/tandem Mass Spectrometry
GC/MS/SIM	Gas Chromatography/Mass Spectrometry/Selected Ion Monitoring
HRGC/LRMS	High Resolution Gas Chromatography/Low Resolution Mass Spectrometry
HRGC/HRMS	High Resolution Gas Chromatography/High Resolution Mass Spectrometry
IC	Ion Chromatography
ICP/MS	Inductively Coupled Plasma/Mass Spectrometry
NA	Neutron Activation (MDNR acronym)
TAGA	Trace Atmospheric Gas Analyzer: a mobile tandem mass spectrometer
XRF	X-Ray Fluorescence
EDXRF	Energy Dispersive X-Ray Fluorescence

Chemical - General

vapour pressure	the pressure exerted when a solid or liquid is in equilibrium with its own vapour.
VOC	Volatile Organic Compound: compounds with vapour pressures $> 10^{-2}$ kPa (101.325 kilopascals = 1 atmosphere).
SVOC	Semi-Volatile Organic Compound: compounds with vapour pressures between 10^{-2} and 10^{-8} kPa.
CB	Chlorobenzene: a compound that contains a chlorine atom bound to an aromatic ring.

CP	Chlorophenol: a compound that contains a hydroxyl (-OH) group bound to an aromatic ring.
PAH	Polycyclic Aromatic Hydrocarbon: a compound that contains two or more fused benzene rings.
PCB	Polychlorinated Biphenyl: a compound consisting of two fused benzene rings with from 1 to 10 chlorine atoms.
PCDD	Polychlorinated Dibenzo-*p*-Dioxin: a triple ring structure made up of two benzene rings connected to each other by a pair of oxygen atoms.
PCDF	Polychlorinated Dibenzofuran: a triple ring structure made up of two benzene rings connected both directly to each other and by a single oxygen atom.
PM_{10}	Particulate matter less than 10 microns aerodynamic diameter (a micron is 10^{-6} m).
TSP	Total Suspended Particulate: particulate approximately 50 microns aerodynamic diameter and smaller.
CLx	For chlorobenzene, chlorophenol, and polychlorinated biphenyl results, x is an integer between 2 and 10 indicating the number of chlorine atoms; e.g. in a table of chlorophenol results, CL5 indicates pentachlorophenol.

Chemical - Specific

As	Arsenic
Be	Beryllium
Cd	Cadmium
Cr	Chromium
Hg	Mercury
Mn	Manganese
Ni	Nickel
Pb	Lead

T4D	Tetrachlorinated dioxin
P5D	Pentachlorinated dioxin
H6D	Hexachlorinated dioxin
H7D	Heptachlorinated dioxin
O8D	Octachlorinated dioxin
T4F	Tetrachlorinated furan
P5F	Pentachlorinated furan
H6F	Hexachlorinated furan
H7F	Hepatchlorinated furan
O8F	Octachlorinated furan
TOTD	Total dioxins
TOTF	Total furans
TOTDF	Total dioxins and furans
2378D	Tetrachlorinated dioxin with chlorine atoms substituted in all four lateral positions (2,3,7, and 8).
2378F	Tetrachlorinated furan with chlorine atoms substituted in all four lateral positions.

I-TEF	International Toxicity Equivalency Factor: a scheme to relate the toxicity of PCDD and PCDF to the most toxic PCDD, 2378D.
TEQ	Toxicity Equivalents: the product of concentration and an appropriate I-TEF.

Units

L	Litre
$\mu g/m^3$	Microgram per cubic metre (a microgram is 10^{-6} gram)
ng/m^3	Nanogram per cubic metre (a nanogram is 10^{-9} gram)
pg/m^3	Picogram per cubic metre (a picogram is 10^{-12} gram)
fg/m^3	Femtogram per cubic metre (a femtogram is 10^{-15} gram)

Statistics

Av	Arithmetic mean
s.d.	Standard deviation
Max	Maximum concentration
Min	Minimum concentration
95th	95th Percentile: the value below which 95% of the observations fall.
90th	90th Percentile: the value below which 90% of the observations fall.
75th	75th Percentile: the value below which 75% of the observations fall.
50th	50th Percentile: the value below which 50% of the observations fall (this is the same as the median value).
n	Number of samples

Miscellaneous

AAQC	Ambient Air Quality Criteria
QA	Quality Assurance
n.d.	Non-Detect: the compound is either not present in the sample or is present at a concentration lower than a specified level; for example the detection limit of the analytical system.
c.l.	Censoring Level: the percentage of non-detects in a data set; e.g. for a 100 sample data set, a c.l. of 40.0 means that in 40 of the 100 samples the compound in question was not detected.
d.l.	Detection Limit: here taken to mean the minimum detectable amount of a compound below which the analyst would report "not detected".

Executive Summary . . .

This report is one of nine reports presenting the results of the Windsor Air Quality Study. This report summarizes the available air monitoring data from the Windsor-Detroit area. The sampling techniques and analytical methods of all agencies contributing data to this study are summarized and, where possible, compared. Concentrations of pollutants of concern have been compiled from several agencies involved in ambient air monitoring activities in the Windsor-Detroit area. The raw data have been processed to produce tables of summary statistics. The arithmetic mean concentration and standard deviation, the maximum and minimum, and several percentiles (a level below which a specified percentage of the observations fall; for example, the 90th percentile is the concentration below which 90% of the observed values fall) are presented on a site-by-site and agency-by-agency basis.

At the end of this report annual average concentrations in Windsor of several pollutants of greatest concern are compared with concentrations in other Ontario communities and, where the data are available, with concentrations in other Canadian cities. Here, the annual average is taken to mean the average of all measurements made in a specific calendar year.

The information contained in this report is primarily intended as input for two other reports of the Windsor Air Quality Study. Annual average concentrations have been used to verify dispersion model calculations in the report entitled "Windsor Air Quality Study: Mathematical Modelling/Source Apportionment", and the long-term statistics have been used for risk analysis in the main interpretive report of this study; the Windsor Air Quality Study: Health Effects Assessment.

1 *Introduction*

1.1 Background

Ambient air monitoring in the province of Ontario has been ongoing for many years[1] but has traditionally focussed on what are commonly referred to as criteria pollutants: for example, total suspended particulate, carbon dioxide, and ozone, to name a few. Atmospheric concentrations and chemical behaviour of these pollutants are well known and attention is now turning to toxic air pollutants.

Air toxics include those compounds not traditionally monitored as criteria pollutants. Organic toxic air pollutants generally fall into one of two categories: i) volatile organic compounds (VOC) which exist only in the vapour phase (familiar examples are benzene, which is emitted from sources such as automobiles and the common dry-cleaning fluid, perchloroethylene); or ii) semi-volatile organic compounds (SVOC) which exist as both particles and vapours. Polycyclic aromatic hydrocarbons (PAH) e.g. benzo-a-pyrene, and polychlorinated dibenzo-*p*-dioxins and polychlorinated dibenzofurans (PCDD and PCDF: hereafter shortened to PCDD/F) fall into this category. Included in the SVOC category are those organic compounds that are true non-volatiles; i.e. they exist only as particles. Metals make up a third group of toxic air pollutants. Although metals are usually considered non-volatile, both arsenic (As) and mercury (Hg) exist in the vapour phase also.

In Ontario, air toxics are routinely monitored in the ambient air, however, for the organics, the period of record is quite short and the spatial coverage of monitors is limited to a few sites mostly in urban areas.

To try to better characterize urban air quality and to assess the health impacts due to airborne toxics in different urban areas, a special studies approach has been adopted by the Ministry of Environment and Energy (MOEE: formerly the Ministry of the Environment). An urban area is selected for intensive study over a one- to two-year period during which time the following activities are undertaken: 1) ambient air monitoring for specific compounds known or suspected to be toxic; 2) emission inventory compilation and mathematical modelling of long-term concentration fields; and 3) risk analysis based on the monitoring and modelling activities.

Windsor was chosen as the location for the first such study due to concerns over the impact on air quality by Michigan emissions including those from a large municipal waste incinerator and a number of steel and coke making operations in the greater Detroit area, as well as several local Windsor industries. Also, two recent reports have focussed public interest on airborne toxics in the region - the International Joint Commission (IJC) "Report of the

International Air Pollution Advisory Board for the Detroit-Windsor/Port Huron-Sarnia Region"[2] and a United States Environmental Protection Agency (USEPA) Region V report "The Transboundary Air Toxics Study"[3].

Environment Canada, Health and Welfare Canada, the Windsor-Essex County Health Unit, and the Windsor Air Management Committee have all contributed to the planning and implementation of this study.

1.2 Study Objectives

The Windsor Air Quality Study was designed to answer the following questions:

- What are the airborne toxics which might cause worry?
- What are the levels of airborne toxics in the airshed?
- What are the major contributing sources for the chemicals of concern?
- What are the most significant exposure pathways for the chemicals of concern?
- What are the relative health risks of Windsor citizens resulting from exposure to the airborne toxics?

The Windsor Air Quality Study consists of seven project areas, each the subject of a technical report such as this. The seven areas are i) Emissions inventory for the Windsor/Detroit airshed; ii) Ambient air monitoring; iii) Source-oriented mobile monitoring; iv) Personal exposure studies; v) Soils and vegetation surveys; vi) Mathematical modelling and source apportionment; and vii) Health effects assessment. The Executive Summary[4] presents the major findings of each of the study areas as well as the conclusions and recommendations of the overall study.

The subject of this report is the ambient air monitoring portion of the Windsor Air Quality Study. The other reports are as follows:

Windsor Air Quality Study: Executive Summary
Windsor Air Quality Study: Emissions Inventory for Windsor/Detroit Airshed[9]
Windsor Air Quality Study: TAGA 6000 Survey Results[6]
Windsor Air Quality Study: Personal Exposure Survey Results[5]
Windsor Air Quality Study: Soil and Garden Produce Survey Results[7]
Windsor Air Quality Study: Mathematical Modelling and Source Apportionment[8]
Windsor Air Quality Study: Health Effects Assessment[10]
Windsor Air Quality Study: Plain Language Summary

2 *Target Compound List*

2.1 Rationale for Selection

The target compound list for the ambient air monitoring portion of the Windsor Air Quality Study is shown below in Table I. Using the USEPA Region V and the IJC reports mentioned in the previous section, an initial list was compiled. This list was then fine-tuned based on airborne toxics emissions in the Windsor/Detroit area. Note that only 1,4-dichlorobenzene is listed as VOC and that chlorobenzenes with more than two chlorine atoms are listed under SVOC.

TABLE I Target compound list for the ambient air monitoring portion of the Windsor Air Quality Study.

Description	Substance	Description	Substance
Metals	Arsenic	"Common" VOC	Benzene
	Beryllium		1,3-Butadiene
	Cadmium		Carbon tetrachloride
	Chromium		Chloroform
	Lead		Formaldehyde
	Manganese	SVOC (including	Benzo(a)pyrene
	Nickel	Polycyclic	Dibenz(a,h)anthracene
VOC	Methylene chloride	Aromatic	Total PAHs
(Chlorinated	Perchloroethylene	Hydrocarbons,	Dioxins
Solvents)	Trichloroethylene	Dioxins,	Furans
VOC (Organics/	para-Dichlorobenzene	Furans,	Polychlorinated
Chemical	Ethylene dichloride	and PCBs)	Biphenyls
Production and	Ethylene dibromide		Chlorobenzenes
Reactions)	Vinyl chloride		Chlorophenols

In this report total chromium is presented. For information on chromium VI the reader should refer to "Windsor Air Quality Study: Personal Exposure Survey Results"[5].

For information on compounds measured by the Trace Atmospheric Gas Analyzer (TAGA) the reader should refer to "Windsor Air Quality Study: TAGA 6000 Survey Results"[6]. The TAGA compounds include mercury, hydrogen chloride, acrylonitrile, N-nitrosodimethylamine, ethylene oxide, propylene oxide, bis(chloromethyl) ether, and chloromethylmethyl ether.

2.2 Sampling and Analytical Methods

Data from several agencies monitoring a variety of compounds are presented later in this report. Each agency tends to use a slightly different sampling/analytical combination although the basic methods are quite similar. Specifically, a particulate trap, a vapour trap, or a combination of the two are used depending upon the type of compound being sampled. Metals are sampled using only a particulate filter, VOC are sampled using only a vapour phase collector, and all other compounds are sampled using a combination of particle filter and vapour phase sorbent trap. Other differences between agencies are evident in the volume of air sampled and the sampling frequency. Generally, a 24 hour sample is collected on a 6 or 12 day schedule, although for some compounds (such as PCDD/F) the sampling duration is longer and the sampling frequency is lower (the exception for PCDD/F is samples collected by Roy F. Weston Inc. which had a sampling duration of 24 hours). Sample volumes range from a few litres for VOC samples to two or three thousand cubic metres for PCDD/F samples. The following tables summarize the sampling and analytical methods of each agency contributing ambient air monitoring data to this study. More detail is available in references 11-17.

TABLE II Ontario Ministry of Environment and Energy Ambient Air Monitoring Protocols.

Compound	# of Species or Isomer Groups Measured	Sampling Method	Analytical Method	Typical Sample Volume	Target Detection Limit	Sampling Frequency (d=days)
Metals	9	Hi-Vol, PM_{10}	XRF, AA, or AAS	2000 m^3	$\approx$ 0.001 $\mu g/m^3$	every 6 d
Metals	2	Lo-Vol	ICP-MS	28 m^3	$\approx$ 0.01 $\mu g/m^3$	every 12 d
VOC	36	Sorbent tube	GC-FID	36 L	0.1 $\mu g/m^3$	every 12 d
PAH	33	Hi-Vol/XAD	GC-FID, GC-MSD	600 m^3	0.03 - 0.17 ng/m^3	variable
PCDD/F	10	Hi-Vol/PUF	GC/MS/MS	1000 - 3000 m^3 (48h)	0.002 - 0.2 pg/m^3	every 28 d
PCDD/F[1]	25	Hi-Vol/PUF	GC/MS/MS	1000 - 3000 m^3 (48h)	0.002 - 0.2 pg/m^3	every 28 d

1 Beginning October 1990.

TABLE III Environment Canada Ambient Air Monitoring Protocols.

Compound	# of Species or Isomer Groups Measured	Sampling Method	Analytical Method	Typical Sample Volume	Target Detection Limit	Sampling Frequency (d=days)
Elements & Ions	42	Dichotomous	EDXRF & IC	24 m^3	1 - 50 ng/m^3	every 6 d
VOC	113	Evacuated Canister	GC-FID/MSD	16 L	0.1 $\mu g/m^3$	every 6 d
PAH	28	Hi-Vol/PUF or PUF-XAD	GC-MSD	1000 m^3 or 650 m^3	0.02 - 0.05 ng/m^3	every 6 d
PCDD/F	10	Hi-Vol/PUF	HRGC-LRMS	1000 m^3	0.05 - 0.2 pg/m^3	every 24 d
PCDD/F[1]	25	Hi-Vol/PUF	HRGC-HRMS	1000 m^3	1 - 20 fg/m^3	every 24 d
PCB	10	Hi-Vol/ PUF-XAD	GC-MSD	650 m^3	0.04 - 0.08 ng/m^3	every 12 d
CB[2]	4	Hi-Vol/ PUF-XAD	GC-MSD	650 m^3	0.02 ng/m^3	every 12 d
CP	4	Hi-Vol/ PUF-XAD	GC-MSD	650 m^3	0.06 - 0.12 ng/m^3	every 12 d

1 Beginning May 1989.

2 Di-chlorobenzenes are sampled as VOC.

The above table was reproduced from Reference 13. Environment Canada samples for PCB, Chlorinated Phenols and Chlorinated Benzenes at the same time with the same sampler. A split extract scheme was used. Occassionally, PAH was also determined from the same sample. A complete description of sampling and analytical protocols is available in Reference 13.

TABLE IV Roy F. Weston Inc. Ambient Air Monitoring Protocols.

Compound	# of Species or Isomer Groups Measured	Sampling Method	Analytical Method	Typical Sample Volume	Target Detection Limit	Sampling Frequency (d=days)
Metals	12	Medium-flow sampler	XRF	160 m^3	0.09 - 9 ng/m^3	every 6 d
PAH	21	Hi-Vol/ PUF/XAD	GC-MS-SIM	700 m^3	0.01 - 0.2 ng/m^3	every 6 d
PCDD/F	unknown	Hi-Vol/PUF	GC-MS	800 m^3	0.05 - 0.5 pg/m^3	every 24 d
PCB	10	Hi-Vol/PUF	GC-MS	800 m^3	2 - 20 pg/m^3	every 12 d
CB	4	Hi-Vol/PUF	GC-MS	800 m^3	10 ng/m^3	every 12 d
CP	4	Hi-Vol/PUF	GC-MS	800 m^3	10 - 50 ng/m^3	every 12 d
Inorganic Acids	unknown	Silica Gel Tube	IC Scan	0.45 m^3	5 - 12 $\mu g/m^3$	every 6 d

The above table was reproduced from Reference 17. Additional information may be obtained from Mr. Jim Serne, PE, Roy F. Weston Inc., 1000 Perimeter Park Drive, Suite E, Morrisville, NC 27560 (919) 380-7410.

TABLE V Michigan Department of Natural Resources Ambient Air Monitoring Protocols.

Compound	# of Species or Isomer Groups Measured	Sampling Method	Analytical Method	Typical Sample Volume	Target Detection Limit	Sampling Frequency (d=days)
Metals	13	Hi-Vol	AA & ICP/MS	$\approx$ 2000 m^3	0.0001 - 0.005 $\mu g/m^3$	variable
VOC	variable	Evacuated Canister	Multi-detector GC	$\approx$ 6 L	$\approx$ 0.4 - 1.4 $\mu g/m^3$	variable
PAH	1	Hi-Vol	AS or NA	$\approx$ 2000 m^3	unknown	variable

3 *Monitoring Sites and Length of Data Record*

Ambient air monitoring stations in the Windsor/Detroit area are shown in Figure 1. Not all sites began operation at the same time or for the same compounds. Two sites in Windsor, Provincial site numbers 12056 and 12057, were installed specifically for the Windsor Air Quality Study. Sites not shown in Figure 1 include VOC monitoring at property lines by industry and sites operated by State or County agencies that are situated outside the Detroit area. This section explains the monitoring site locations and the length of data record for each of the monitoring sites.

3.1 Canadian

Monitoring on the Canadian side of the Detroit River is carried out by the Ontario Ministry of Environment and Energy (MOEE) and Environment Canada, Conservation and Protection (ECC&P). ECC&P began their monitoring effort in July 1987 at 467 University Avenue (Provincial site #12008). The only compounds in Table I not measured at this time were beryllium and formaldehyde, Formaldehyde sampling began in November 1989. In May 1990 ECC&P installed a second monitoring site in Windsor at College and South Street (Provincial site #12016). The Walpole Island site began operation in January 1988.

MOEE has operated Hi-Vol samplers for TSP and metals in the Windsor area for many years. For this report, only data from 1988 onwards is used. Samplers specifically for arsenic and beryllium sampling were installed at #12007 and #12008 in March of 1992. VOC monitoring began at site #12008 in the summer of 1989. For this study, the first full year of monitoring (1990) onwards is used. A second VOC monitor was installed in June 1990 at site #12007 and in June 1991 two more VOC monitoring sites were installed at sites #12056 and #12057. PCDD/F monitoring began in August 1988 at site #12008. A second site was added in September 1991 at site #12057. PAH sampling began at site #12007 in March 1989. A second sampler was added at site #12008 in August 1990. Two additional samplers were installed at #12056 and #12057 in June 1991.

MOEE does not measure formaldehyde, polychlorinated biphenyls, chlorophenols, or chlorobenzenes except the di-chlorobenzenes which are measured as VOC.

Data up to December 1992 are used in this report for all sites and compounds. Arsenic and beryllium data were collected between March 1992 and March 1993.

3.2 American

On the American side of the Detroit River the Michigan Department of Natural Resources (MDNR) and the Wayne County Department of Health, Air Pollution Control Division (WCAPCD) operate sampling equipment for a variety of pollutants. Under contract to the Greater Detroit Resource Recovery Authority (GDRRA) Roy F. Weston Inc. (WESTON) has also measured many pollutants at two sites near the GDRRA's three thousand ton/day municipal waste incinerator. Figure 1 shows monitoring sites in the Detroit area.

MDNR and WCAPCD have operated numerous monitoring sites for various different time periods. In this report the following information is used; from the MDNR, metals data from six sites for five years (1987-1991), VOC data from 1990 and 1991 at one site and for 1988 at two sites, benzo(a)pyrene from four sites for five years, and data from two sites operated by Weston from late 1987 to the end of 1990.

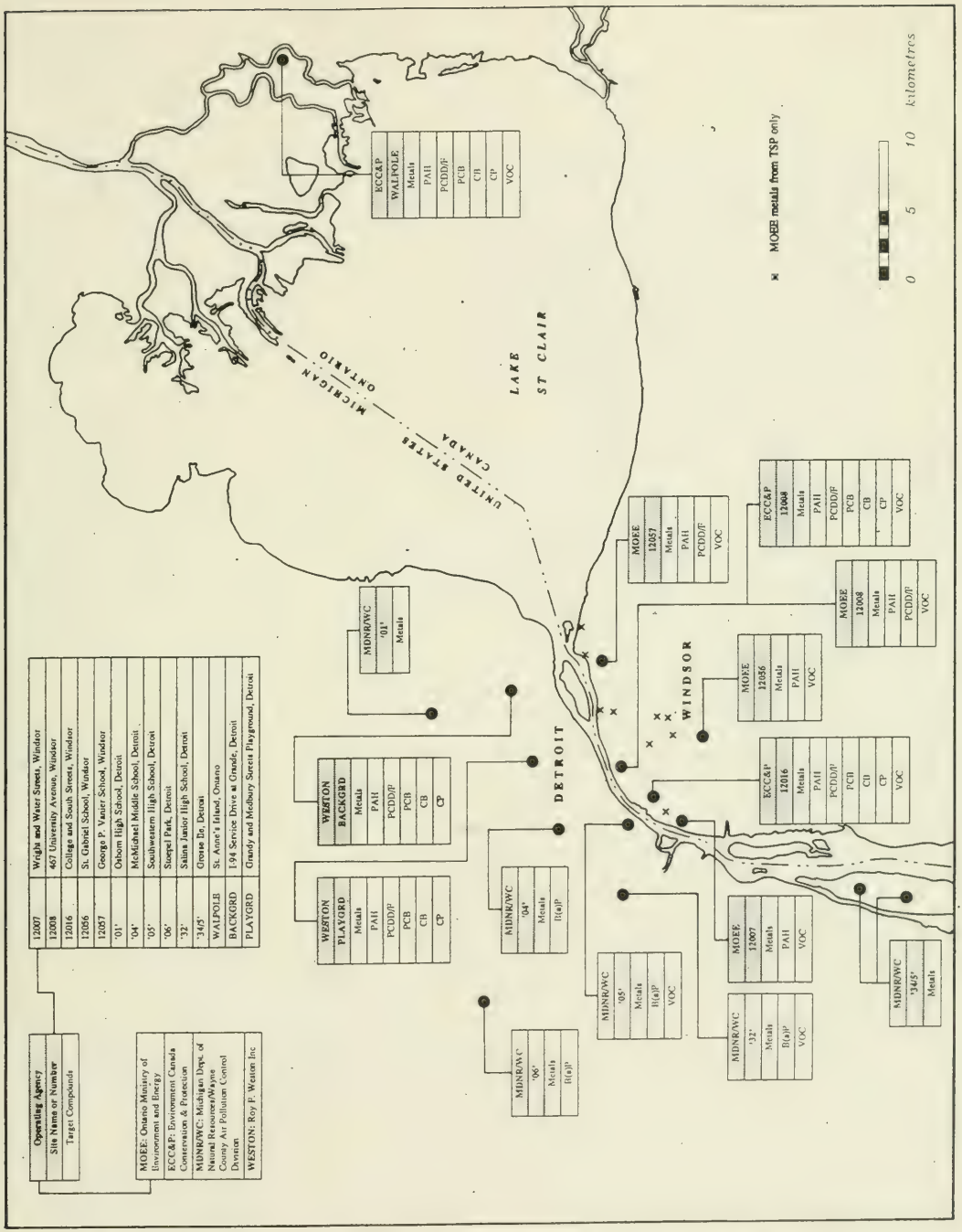
Operating Agency
Site Name or Number
Target Compounds
MOEE: Ontario Ministry of Environment and Energy
ECC&P: Environment Canada Conservation & Protection
MDNR/WC: Michigan Dept. of Natural Resources/Wayne County Air Pollution Control Division
WESTON: Roy F. Weston Inc
12007 Wright and Water Streets, Windsor
12008 407 University Avenue, Windsor
12016 College and South Streets, Windsor
12056 St. Gabriel School, Windsor
12057 George P. Vanier School, Windsor
'01' Osborn High School, Detroit
'04' McMichael Middle School, Detroit
'05' Southwestern High School, Detroit
'06' Stoepel Park, Detroit
'32' Stalins Junior High School, Detroit
'3455' Grosse Ile, Detroit
WALPOLE St. Anne's Island, Ontario
BACKGRD I-94 Service Drive at Grande, Detroit
PLAYGRD Grandy and Melbury Sorens Playground, Detroit
MICHIGAN
ONTARIO
UNITED STATES
CANADA
LAKE
ST CLAIR
DETROIT
WINDSOR
MOEE metals from TSP only
0 5 10 kilometres

FIGURE 1 Air Toxics Monitoring Activities in the Windsor/Detroit Area

4 *Data Limitations*

Different agencies have different protocols for assuring the quality of the data they collect. Also, there exist many different methods for handling non-detect results in data sets. This section presents data quality information necessary to understand the results presented in the next section. General statements about the quality of data collected by each agency are presented first. This information has been gleaned from data reports and publications authored by the respective agencies. Methods for handling non-detects and the rationale for using them are discussed briefly before presenting results from some inter-agency monitoring comparisons.

4.1 Data Quality

The various programs from which data have been gleaned were initiated for different reasons: for instance routine monitoring (MOEE), initial screening (UTAMP), or special purpose (WESTON, ECC&P). However, all programs strove to produce data of known quality and were designed to ensure that acceptable levels of quality assurance (QA) parameters were met and maintained.

Typical approaches to ensure high quality data include duplicate sampling, replicate analyses, field blanks, trip blanks, colocated sampling between agencies, and routine maintenance procedures such as periodic sampler calibration, sampler inlet cleaning, leak checking and so on. As well, analytical laboratories have extensive QA programs. Not all QA procedures were followed by all agencies nor are all procedures applicable to all sampling methods. For example, a VOC sample collected in an evacuated canister may be subjected to replicate analysis whereas the same sample collected on a sorbent cartridge can only be analyzed once. Even if all agencies follow similar QA procedures, acceptance/rejection criteria may differ between agencies thus leading to variability in the data quality. For example, all agencies may monitor flow rates and volumes, however, one agency may reject a sample based on 10% variability in these two sampling parameters while another agency may reject a sample based on 15% variability in the same two parameters.

Details of sampling and analytical QA procedures are available in references 11 to 19. Results from inter-agency comparisons are presented below in § 4.3.

4.2 Handling Non-detects

Many of the target compounds are present in ambient air at trace levels and may not always be detected by the sampling/analytical method. The resulting censored dataset presents problems for end-users of the data who wish to compile summary statistics (such as annual averages) for permitting or compliance purposes or trend analysis. The "best" method for backfilling non-detect (n.d.) results varies depending upon the size of the dataset (hence, the reliability with which the distribution may be determined), the level of censoring (fewer non-detects present less of a problem), and, possibly, the target audience for the data analysis (the general public may readily accept simple substitution techniques whereas statisticians would be comfortable with more sophisticated statistical replacement techniques).

Backfill techniques include deletion (remove all non-detects and generate means and standard deviations from the remaining observations), simple substitution (set non-detects (n.d.) equal to the detection limit (d.l.) or some fraction of the detection limit), and statistical estimation (log-probit analysis, maximum likelihood estimation, iterative or regression order statistics, etc.). The deletion technique is generally considered unacceptable and although the statistical techniques are more rigorous, data used in this report have been backfilled using simple substitution. This approach has been shown to be no different from statistical estimation techniques for censoring levels less than 80%.[20]

The substitution techniques used vary from agency to agency and, in some cases, from compound class to compound class. MOEE uses half the detection limit for all compound classes except metals. Due to detection limit changes, numbers higher than the reported maximum occur by substituting half the detection limit for n.d. results. For this reason, summary statistics for all MOEE metals data are calculated after replacing n.d. with 0.0. ECC&P replaces n.d. values with half the detection limit but does not calculate summary statistics when more than 60% of the values are below detection.[13] However, VOC data distributed in electronic format by ECC&P shows zero for non-detect results. WESTON substitutes half the d.l., however, in cases where this results in zero due to roundoff error (PAH data occasionally) data values were not included in any analysis.[17] The WCAPCD also sets n.d. values equal to half the d.l. The Michigan Department of Natural Resources reports a range of arithmetic means. The minimum mean is calculated setting n.d. values equal to zero, and the maximum mean is calculated setting n.d. values to the minimum detection limit.[18]

Some results in this report have been combined from different agencies to generate multi-site, multi-year statistics. This practice creates a problem only when combining VOC data from ECC&P and MOEE. In this instance, n.d. values are set to zero because specific detection limits

for the ECC&P data are not readily available.

4.3 Inter-Agency Comparisons

Inter-agency comparisons in the Windsor area were carried out by MOEE and ECC&P and by ECC&P and WESTON. The MOEE vs ECC&P comparisons consisted of colocated samplers (VOC, PAH, and PCDD/F) operated for a considerable period of time, generally more than one year. The ECC&P vs WESTON comparisons (PAH, PCB, and PCDD/F) consisted of colocated samplers operated on a few specific days rather than as a routine procedure.

4.3.1 MOEE vs ECC&P

At the University Avenue site in Windsor (#12008), VOC have been sampled using both canisters (ECC&P) and cartridges (MOEE) since 1989. Although a full analysis is available elsewhere[21] it is appropriate to briefly discuss the results for the target compounds. Table VI shows the arithmetic mean (Average), standard deviation (s.d.), maximum, minimum, number of samples (#Samp), number of non-detects (#ND), and the median percent agreement. The percent agreement is a number between 0 (perfect disagreement: i.e. a compound detected by one sampler but not by another) and 100 (perfect agreement: both samplers detect the compound at the same level). The median value is reported in the table.

Generally the median percent agreement is quite good. When agreement is poor it appears to be for compounds for which ECC&P has a more sensitive analytical method (a flame ionization detector (MOEE) is not as good as a mass selective detector (ECC&P) for chlorinated compounds): MOEE reports a large proportion of non-detects whereas ECC&P does not. 1,2-dichloroethane, carbon tetrachloride, and chloroform are good examples of this.

TABLE VI Summary Statistics for Cartridge (MOEE) vs Canister (ECC&P) Sampling in Windsor.

	Average (s.d.)		Maximum		Minimum		#Samp (#ND)		Median % Agree-ment
Cmpd	MOEE	ECC&P	MOEE	ECC&P	MOEE	ECC&P	MOEE	ECC&P	
DCLM	1.2 (1.2)	1.4 (1.1)	5.3	5.0	0.0	0.5	31(8)	25(0)	76
PERC	1.4 (1.2)	1.2 (1.1)	5.6	4.8	0.0	0.2	31(4)	31(0)	71
TRIC	0.7 (0.7)	0.4 (0.2)	3.5	0.7	0.0	0.1	31(11)	31(0)	46
14DCB	0.8 (1.0)	2.1 (2.9)	4.1	14.6	0.0	0.2	21(7)	31(0)	66
112DCE		0.1 (0.1)	2.1	0.2	0.0	0.0	31(29)	31(9)	0
DBET			0.7	0.4		0.0	31(30)	31(29)	100
VCL							21(21)	31(31)	100
BENZ	3.7 (2.0)	3.1 (1.7)	8.5	9.2	0.1	0.9	31(0)	31(0)	83
13BTN	0.2 (0.1)	0.2 (0.1)	0.5	0.7	0.0	0.0	31(7)	31(2)	75
CTET		1.0 (0.2)	8.7	1.4	0.0	0.7	31(27)	31(0)	0
TCLM		0.2 (0.1)	12.6	0.5	0.0	0.0	31(27)	31(3)	0

The key to compound names is as follows: DCLM - methylene chloride; PERC - perchloroethylene; TRIC - trichloroethylene; 14DCB - para-dichlorobenzene; 112DCE - Ethylene dichloride; DBET - ethylene dibromide; VCL -vinyl chloride; BENZ - benzene; 13BTN - 1,3-Butadiene; CTET - carbon tetrachloride; TCLM - chloroform.

Analysis of colocated PAH and PCDD/F sampling results is underway and will be reported at a later date.

4.3.2 ECC&P vs WESTON

Environment Canada and WESTON completed several intercomparisons for PCDD/PCDF, PAH, and PCB. Colocated sampling was carried out in Detroit for PAH and PCDD/PCDF and in Windsor for PAH, PCB, and PCDD/PCDF. "Good agreement was found between these duplicate samples collected by WESTON and EC."[17].

5 *Results*

Summary statistics are presented for all monitoring sites and compounds monitored. The same summary statistics are not available for all compounds or all sites. For instance, only annual averages are available for most of the Detroit data. Results are presented by compound group and explanatory notes specific to the site or compound are appended where necessary. Summary statistics are presented on an annual basis, however, for some sites and compounds a long-term calculation is also included.

All terms are defined in the Glossary and Acronyms section at the beginning of this report, however, the statistics terms are also defined below for convenience.

Av arithmetic mean
s.d. standard deviation
Max maximum concentration
Min minimum concentration
95th 95th percentile: the value below which 95% of the observations fall
90th 90th percentile: the value below which 90% of the observations fall
75th 75th percentile: the value below which 75% of the observations fall
50th 50th percentile: the value below which 50% of the observations fall (same as median)
n number of samples
n.d. non-detect: the compound was either not present in the sample or was present at a concentration lower than a specified level, for example the detection limit of the analytical system
c.l. censoring level: the percentage of non-detects in a dataset.

5.1 Metals

Table VII shows summary statistics for monitoring sites in Windsor for 1988 to 1992 inclusive. Metals were determined from Hi-Vol filters. Arsenic and beryllium are presented later and mercury is not measured by this technique. All other metals from the target compound list are presented. If the censoring level is $< 80\%$, all non-detects are replaced with 0.0 before calculating summary statistics. If the censoring level is $\geq 80\%$ then only the maximum and minimum concentrations are reported.

TABLE VII MOEE Windsor Metals (ng/m^3) From TSP.

site 12005 - 7730 Riverside Drive

12005		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1988	Pb	36.5	26.3	130.0	n.d.	80.0	70.0	50.0	30.0	52	7.7
	Ni			10.0	n.d.					52	90.4
	Cr			10.0	n.d.					52	92.3
	Cd	1.2	1.6	7.0	n.d.	5.0	3.0	2.0	0.5	52	50.0
	Mn	42.9	31.8	120.0	n.d.	110.0	90.0	60.0	30.0	52	1.9
1989	Pb	28.2	19.7	90.0	n.d.	60.0	50.0	40.0	30.0	57	17.5
	Ni			20.0	n.d.					57	82.5
	Cr			20.0	n.d.					57	82.5
	Cd	1.0	1.5	7.0	n.d.	4.0	2.0	1.0	n.d.	57	50.9
	Mn	35.6	27.7	160.0	n.d.	90.0	70.0	40.0	30.0	57	1.8
1990	Pb	14.8	12.3	40.0	n.d.	40.0	30.0	20.0	15.0	52	28.8
	Ni	Not Detected by MOEE at This Site in 1990								52	100
	Cr			10.0	n.d.					52	96.2
	Cd			3.0	n.d.					52	84.6
	Mn	31.9	26.3	110.0	n.d.	80.0	70.0	50.0	25.0	52	9.6
1991	Pb	12.9	13.4	50.0	n.d.	40.0	30.0	20.0	10.0	58	39.7
	Ni			20.0	n.d.					58	94.8
	Cr	3.1	7.1	30.0	n.d.	20.0	10.0	n.d.	n.d.	58	79.3
	Cd	0.5	0.9	4.0	n.d.	2.0	2.0	n.d.	n.d.	58	75.9
	Mn	24.3	19.3	80.0	n.d.	70.0	50.0	30.0	20.0	58	17.2
1992	Pb	12.5	11.1	40.0	n.d.	30.0	30.0	20.0	10.0	57	33.3
	Ni			20.0	n.d.					57	89.5
	Cr			20.0	n.d.					57	80.7
	Cd	1.5	6.9	52.0	n.d.	4.0	3.0	n.d.	n.d.	57	75.4
	Mn	19.0	17.7	90.0	n.d.	60.0	40.0	30.0	20.0	58	22.4

TABLE VII (Continued) ng/m^3

site 12006 - Beach Lane & Highway 18 (LaSalle)

12006		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1988	Pb	Not Detected by MOEE at This Site in 1988								5	100
	Ni	Not Detected by MOEE at This Site in 1988								5	100
	Cr			10.0	n.d.					5	80.0
	Cd	2.0	2.1	5.0	0.0	5.0	5.0	3.0	2.0	5	40.0
	Mn	Not Detected by MOEE at This Site in 1988								5	100
1989	Pb	Not Measured by MOEE at This Site in 1989									
	Ni	Not Measured by MOEE at This Site in 1989									
	Cr	Not Measured by MOEE at This Site in 1989									
	Cd	Not Measured by MOEE at This Site in 1989									
	Mn	Not Measured by MOEE at This Site in 1989									
1990	Pb	Not Measured by MOEE at This Site in 1990									
	Ni	Not Measured by MOEE at This Site in 1990									
	Cr	Not Measured by MOEE at This Site in 1990									
	Cd	Not Measured by MOEE at This Site in 1990									
	Mn	Not Measured by MOEE at This Site in 1990									
1991	Pb	Not Measured by MOEE at This Site in 1991									
	Ni	Not Measured by MOEE at This Site in 1991									
	Cr	Not Measured by MOEE at This Site in 1991									
	Cd	Not Measured by MOEE at This Site in 1991									
	Mn	Not Measured by MOEE at This Site in 1991									
1992	Pb	Not Measured by MOEE at This Site in 1992									
	Ni	Not Measured by MOEE at This Site in 1992									
	Cr	Not Measured by MOEE at This Site in 1992									
	Cd	Not Measured by MOEE at This Site in 1992									
	Mn	Not Measured by MOEE at This Site in 1992									

TABLE VII (Continued) ng/m^3

site 12007 - Wright & Water Streets

12007		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1988	Pb	42.6	35.9	170.0	n.d.	110.0	80.0	60.0	40.0	57	17.5
	Ni	Not Measured by MOEE at This Site in 1988									
	Cr	Not Measured by MOEE at This Site in 1988									
	Cd	Not Measured by MOEE at This Site in 1988									
	Mn	Not Measured by MOEE at This Site in 1988									
1989	Pb	23.0	26.6	110.0	n.d.	70.0	60.0	40.0	15.0	54	38.9
	Ni	Not Measured by MOEE at This Site in 1989									
	Cr	Not Measured by MOEE at This Site in 1989									
	Cd	Not Measured by MOEE at This Site in 1989									
	Mn	Not Measured by MOEE at This Site in 1989									
1990	Pb	24.3	21.7	100.0	n.d.	60.0	40.0	40.0	20.0	51	27.5
	Ni			10.0	n.d.					34	94.1
	Cr			10.0	n.d.					34	85.3
	Cd	1.0	1.62	6.0	n.d.	4.0	4.0	1.0	n.d.	34	64.7
	Mn	88.2	58.9	310.0	10.0	210.0	140.0	120.0	80.0	34	0.0
1991	Pb	23.2	16.8	60.0	n.d.	60.0	40.0	30.0	20.0	53	20.8
	Ni			20.0	n.d.					53	86.8
	Cr	4.7	7.2	30.0	n.d.	20.0	10.0	10.0	n.d.	53	64.2
	Cd	1.6	3.0	16.0	n.d.	7.0	4.0	2.0	n.d.	53	54.7
	Mn	71.7	52.3	250.0	10.0	210.0	140.0	90.0	60.0	53	0.0
1992	Pb	20.9	15.2	60.0	n.d.	50.0	40.0	30.0	20.0	53	18.9
	Ni			20.0	n.d.					53	90.6
	Cr	4.7	9.5	50.0	n.d.	20.0	20.0	10.0	n.d.	53	73.6
	Cd	1.8	2.2	8.0	n.d.	7.0	5.0	3.0	1.0	53	39.6
	Mn	54.9	42.4	240.0	10.0	120.0	110.0	80.0	40.0	53	0.0

TABLE VII (Continued) ng/m^3

site 12008 - 467 University Avenue West

12008		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1988	Pb	67.8	40.4	340.0	10.0	145.0	110.0	80.0	60.0	340	0.0
	Ni	5.9	14.7	160.0	n.d.	20.0	20.0	10.0	n.d.	340	67.9
	Cr	4.8	8.3	70.0	n.d.	20.0	10.0	10.0	n.d.	340	63.2
	Cd	2.6	2.8	15.0	n.d.	9.0	6.0	3.0	2.0	340	17.9
	Mn	72.4	51.8	350.0	n.d.	180.0	140.0	90.0	60.0	340	1.2
1989	Pb	40.8	23.6	150.0	n.d.	90.0	70.0	50.0	40.0	318	1.6
	Ni	10.4	30.7	350.0	n.d.	50.0	20.0	10.0	n.d.	318	63.2
	Cr	10.9	13.6	80.0	n.d.	40.0	30.0	20.0	10.0	318	46.5
	Cd	2.1	3.1	22.0	n.d.	8.0	6.0	3.0	1.0	318	40.3
	Mn	58.8	38.5	260.0	n.d.	140.0	110.0	70.0	50.0	318	0.9
1990	Pb	26.4	17.1	120.0	n.d.	50.0	45.0	40.0	25.0	160	10.0
	Ni			50.0	n.d.					160	96.9
	Cr	7.0	10.1	40.0	n.d.	30.0	20.0	10.0	n.d.	160	60.0
	Cd	1.8	3.1	21.0	n.d.	6.5	4.5	2.0	1.0	160	46.2
	Mn	52.4	30.5	170.0	n.d.	110.0	100.0	70.0	50.0	160	0.6
1991	Pb	29.7	18.9	90.0	n.d.	60.0	50.0	40.0	30.0	58	10.3
	Ni			20.0	n.d.					58	94.8
	Cr			20.0	n.d.					58	82.8
	Cd	1.9	2.7	13.0	n.d.	6.0	6.0	3.0	0.5	58	50.0
	Mn	37.2	22.9	110.0	n.d.	80.0	70.0	50.0	40.0	58	5.2
1992	Pb	20.5	13.1	50.0	n.d.	50.0	40.0	30.0	20.0	56	10.7
	Ni			50.0	n.d.					56	85.7
	Cr	4.6	9.1	50.0	n.d.	20.0	20.0	10.0	n.d.	56	71.4
	Cd	1.5	2.9	12.0	n.d.	10.0	5.0	2.0	n.d.	56	64.3
	Mn	29.1	17.8	70.0	n.d.	70.0	60.0	30.0	30.0	56	5.4

TABLE VII (Continued) ng/m^3

site 12009 - 9725 Riverside Drive East

12009		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1988	Pb	15.7	21.1	80.0	n.d.	60.0	50.0	30.0	5.0	56	50.0
	Ni			20.0	n.d.					4	75.0
	Cr	Not Detected by MOEE at This Site in 1988								4	100
	Cd			3.0	n.d.					4	25.0
	Mn			30.0	n.d.					4	25.0
1989	Pb	20.9	20.3	80.0	n.d.	60.0	40.0	30.0	20.0	54	31.5
	Ni	Not Measured by MOEE at This Site in 1989									
	Cr	Not Measured by MOEE at This Site in 1989									
	Cd	Not Measured by MOEE at This Site in 1989									
	Mn	Not Measured by MOEE at This Site in 1989									
1990	Pb	8.3	13.5	50.0	n.d.	40.0	30.0	20.0	n.d.	59	64.4
	Ni	Not Measured by MOEE at This Site in 1990									
	Cr	Not Measured by MOEE at This Site in 1990									
	Cd	Not Measured by MOEE at This Site in 1990									
	Mn	Not Measured by MOEE at This Site in 1990									
1991	Pb	26.9	39.0	230.0	n.d.	80.0	70.0	40.0	10.0	52	42.3
	Ni	Not Detected by MOEE at This Site in 1991								4	100
	Cr			20.0	n.d.					4	50.0
	Cd			4.0	n.d.					4	50.0
	Mn			70.0	n.d.					4	0.0
1992	Pb	9.8	21.2	90.0	n.d.	60.0	40.0	n.d.	n.d.	58	75.9
	Ni	Not Measured by MOEE at This Site in 1992									
	Cr	Not Measured by MOEE at This Site in 1992									
	Cd	Not Measured by MOEE at This Site in 1992									
	Mn	Not Measured by MOEE at This Site in 1992									

TABLE VII (Continued) ng/m^3

site 12011– Drouillard Road & Richmond Street

12011		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1988	Pb	60.7	36.4	190.0	20.0	130.0	120.0	70.0	50.0	29	0.0
	Ni	3.8	6.8	20.0	n.d.	20.0	20.0	10.0	n.d.	29	72.4
	Cr	7.2	8.8	30.0	n.d.	20.0	20.0	10.0	n.d.	29	51.7
	Cd	2.2	2.1	9.0	n.d.	6.0	5.0	3.0	2.0	29	24.1
	Mn	96.5	66.6	310.0	20.0	250.0	170.0	130.0	90.0	29	0.0
1989	Pb	50.7	27.3	180.0	n.d.	100.0	80.0	60.0	50.0	57	1.8
	Ni	13.5	30.0	140.0	n.d.	100.0	30.0	10.0	n.d.	57	59.6
	Cr	8.4	11.6	50.0	n.d.	30.0	30.0	10.0	n.d.	57	52.6
	Cd	1.7	1.8	8.0	n.d.	6.0	5.0	2.0	1.0	57	28.1
	Mn	97.4	78.7	480.0	10.0	250.0	170.0	120.0	80.0	57	0.0
1990	Pb	26.9	17.1	80.0	n.d.	60.0	50.0	40.0	20.0	55	5.5
	Ni			10.0	n.d.					55	87.3
	Cr	4.4	8.6	30.0	n.d.	30.0	20.0	10.0	n.d.	55	74.5
	Cd	0.6	1.2	6.0	n.d.	4.0	2.0	1.0	n.d.	55	72.7
	Mn	73.5	55.9	300.0	20.0	210.0	130.0	90.0	60.0	55	0.0
1991	Pb	25.4	19.3	70.0	n.d.	60.0	60.0	40.0	20.0	56	19.6
	Ni			20.0	n.d.					56	89.3
	Cr			20.0	n.d.					56	83.9
	Cd	2.6	12.1	91.0	n.d.	6.0	4.0	2.0	n.d.	56	64.3
	Mn	44.8	27.6	160.0	n.d.	100.0	80.0	50.0	40.0	56	3.6
1992	Pb	32.5	27.1	150.0	n.d.	90.0	60.0	40.0	30.0	57	7.0
	Ni			20.0	n.d.					57	86.0
	Cr	4.9	8.5	30.0	n.d.	20.0	20.0	10.0	n.d.	57	70.2
	Cd	0.9	1.4	6.0	n.d.	4.0	3.0	1.0	n.d.	57	61.4
	Mn	42.8	28.1	170.0	10.0	100.0	80.0	50.0	40.0	57	0.0

TABLE VII (Continued) ng/m^3

site 12013 - 3665 Wyandotte Street East (Filtration Plant)

12013		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1988	Pb	71.7	52.4	260.0	n.d.	180.0	140.0	90.0	50.0	54	0.0
	Ni	8.0	10.0	40.0	n.d.	30.0	20.0	10.0	5.0	54	50.0
	Cr	12.6	18.1	70.0	n.d.	50.0	40.0	20.0	n.d.	54	51.9
	Cd	2.2	2.5	11.0	n.d.	7.0	5.0	3.0	2.0	54	27.8
	Mn	288.7	356.8	1350	10.0	1230	870.0	370.0	110.0	54	0.0
1989	Pb	52.8	35.9	170.0	10.0	140.0	100.0	70.0	40.0	53	0.0
	Ni	7.7	13.8	80.0	n.d.	30.0	20.0	10.0	n.d.	53	58.5
	Cr	16.6	18.6	110.0	n.d.	40.0	40.0	20.0	10.0	53	26.4
	Cd	1.3	1.9	7.0	n.d.	6.0	4.0	2.0	n.d.	53	52.8
	Mn	185.1	229.5	840.0	n.d.	820.0	550.0	180.0	80.0	53	1.9
1990	Pb	29.8	19.6	80.0	n.d.	70.0	60.0	40.0	30.0	54	9.3
	Ni			20.0	n.d.					54	83.3
	Cr	17.8	19.6	100.0	n.d.	60.0	40.0	20.0	10.0	54	29.6
	Cd	0.9	1.2	5.0	n.d.	3.0	3.0	2.0	n.d.	54	59.3
	Mn	184.4	236.2	1060	20.0	730.0	590.0	190.0	85.0	54	0.0
1991	Pb	33.6	29.1	130.0	n.d.	110.0	80.0	40.0	30.0	55	9.1
	Ni	3.1	6.1	20.0	n.d.	20.0	10.0	n.d.	n.d.	54	75.9
	Cr	8.5	10.0	30.0	n.d.	30.0	20.0	20.0	5.0	54	50.0
	Cd	1.3	1.8	7.0	n.d.	5.0	3.0	2.0	n.d.	54	57.4
	Mn	98.5	133.1	700.0	n.d.	460.0	260.0	110.0	50.0	55	3.6
1992	Pb	34.4	50.9	330.0	n.d.	110.0	60.0	40.0	20.0	52	15.4
	Ni			370.0	n.d.					52	86.5
	Cr	10.0	32.5	230.0	n.d.	40.0	20.0	10.0	n.d.	52	61.5
	Cd	1.4	2.1	10.0	n.d.	6.0	4.0	2.0	n.d.	52	55.8
	Mn	92.5	134.2	710.0	n.d.	420.0	210.0	95.0	40.0	52	5.8

TABLE VII (Continued) ng/m^3

site 12015 - Highway 18 & Prospect (Sewage Station)

12015		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1988	Pb	58.0	30.1	140.0	10.0	110.0	90.0	80.0	60.0	49	0.0
	Ni	3.3	5.2	20.0	n.d.	10.0	10.0	10.0	n.d.	49	69.4
	Cr	5.9	7.1	30.0	n.d.	20.0	10.0	10.0	n.d.	49	51.0
	Cd	1.9	3.0	14.0	n.d.	8.0	6.0	2.0	1.0	49	46.9
	Mn	107.5	54.0	220.0	40.0	200.0	180.0	150.0	100.0	49	0.0
1989	Pb	39.2	22.2	90.0	n.d.	80.0	75.0	50.0	40.0	60	5.0
	Ni	3.7	7.3	40.0	n.d.	20.0	10.0	10.0	n.d.	60	71.7
	Cr	3.3	6.0	20.0	n.d.	20.0	10.0	10.0	n.d.	60	71.7
	Cd	3.2	4.6	28.0	n.d.	8.0	7.0	3.0	2.0	61	23.0
	Mn	Not Detected by MOEE at This Site in 1989								60	100
1990	Pb	33.6	41.4	320.0	n.d.	60.0	50.0	40.0	30.0	58	6.9
	Ni			20.0	n.d.					58	91.4
	Cr	5.7	12.6	80.0	n.d.	30.0	20.0	10.0	n.d.	58	69.0
	Cd	1.9	3.2	13.0	n.d.	11.0	6.0	2.0	n.d.	58	53.4
	Mn	87.4	45.3	190.0	20.0	170.0	160.0	120.0	80.0	58	0.0
1991	Pb	33.1	19.4	80.0	n.d.	60.0	60.0	50.0	30.0	59	10.2
	Ni			30.0	n.d.					59	91.5
	Cr	5.3	8.0	30.0	n.d.	20.0	20.0	10.0	n.d.	59	64.4
	Cd	2.3	4.7	29.0	n.d.	13.0	7.0	3.0	1.0	59	49.2
	Mn	66.8	42.6	190.0	10.0	170.0	130.0	90.0	60.0	59	0.0
1992	Pb	21.7	15.2	80.0	n.d.	50.0	40.0	30.0	20.0	58	13.8
	Ni			20.0	n.d.					57	87.7
	Cr	6.5	8.7	30.0	n.d.	30.0	20.0	10.0	n.d.	58	55.2
	Cd	2.3	4.8	33.0	n.d.	10.0	5.0	2.0	1.0	57	40.4
	Mn	53.5	28.1	130.0	10.0	100.0	90.0	70.0	50.0	58	0.0

TABLE VII (Continued) ng/m^3

site 12038 - 2885 Howard Avenue

12038		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1988	Pb	104.9	51.5	240.0	40.0	210.0	190.0	120.0	100.0	57	0.0
	Ni	9.3	13.2	90.0	n.d.	20.0	20.0	10.0	10.0	57	40.4
	Cr	14.0	14.7	70.0	n.d.	40.0	30.0	20.0	10.0	57	35.1
	Cd	1.9	1.9	8.0	n.d.	6.0	5.0	3.0	2.0	57	26.3
	Mn	113.3	67.7	290.0	30.0	240.0	220.0	160.0	90.0	57	0.0
1989	Pb	73.0	36.3	180.0	20.0	150.0	120.0	90.0	70.0	57	0.0
	Ni	7.7	17.9	120.0	n.d.	40.0	20.0	10.0	n.d.	57	59.6
	Cr	16.3	18.6	90.0	n.d.	60.0	40.0	20.0	10.0	57	29.8
	Cd	1.3	1.9	8.0	n.d.	6.0	4.0	2.0	1.0	57	47.4
	Mn	93.3	60.3	290.0	20.0	210.0	180.0	130.0	80.0	57	0.0
1990	Pb	44.1	45.8	260.0	n.d.	110.0	80.0	50.0	30.0	54	9.3
	Ni			220.0	n.d.					54	81.5
	Cr	15.2	27.5	140.0	n.d.	60.0	40.0	20.0	n.d.	54	51.9
	Cd	0.8	1.7	11.0	n.d.	3.0	2.0	1.0	n.d.	54	66.7
	Mn	98.1	63.4	350.0	20.0	220.0	190.0	120.0	80.0	54	0.0
1991	Pb	39.8	28.3	120.0	n.d.	100.0	90.0	60.0	30.0	59	6.8
	Ni	4.1	11.5	80.0	n.d.	20.0	10.0	n.d.	n.d.	59	76.3
	Cr	13.6	16.3	90.0	n.d.	40.0	30.0	20.0	10.0	59	42.4
	Cd	0.6	1.2	6.0	n.d.	2.0	2.0	1.0	n.d.	59	71.2
	Mn	87.8	59.3	230.0	20.0	210.0	190.0	130.0	70.0	59	0.0
1992	Pb	35.1	22.6	110.0	n.d.	70.0	70.0	40.0	30.0	59	3.4
	Ni	5.1	17.7	130.0	n.d.	20.0	20.0	n.d.	n.d.	59	78.0
	Cr	8.6	11.2	40.0	n.d.	30.0	30.0	20.0	n.d.	59	54.2
	Cd	0.7	1.2	5.0	n.d.	4.0	2.0	1.0	n.d.	59	66.1
	Mn	71.4	48.0	230.0	n.d.	170.0	160.0	90.0	60.0	59	1.7

TABLE VII (Continued) ng/m^3

site 12039 - Douglas Street & E.C. Row West

12039		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1988	Pb	106.9	61.6	330.0	10.0	220.0	210.0	150.0	90.0	59	0.0
	Ni	4.6	12.4	90.0	n.d.	10.0	10.0	10.0	n.d.	59	69.5
	Cr			30.0	n.d.					59	88.1
	Cd	1.5	1.6	6.0	n.d.	5.0	4.0	2.0	1.0	59	33.9
	Mn	69.5	29.6	140.0	20.0	130.0	120.0	90.0	60.0	59	0.0
1989	Pb	62.3	34.2	200.0	10.0	125.0	100.0	80.0	55.0	60	0.0
	Ni			60.0	n.d.					60	90.0
	Cr			20.0	n.d.					60	85.0
	Cd	1.7	2.1	14.0	n.d.	4.5	3.0	2.0	1.0	60	26.7
	Mn	60.0	28.6	160.0	20.0	110.0	100.0	70.0	55.0	60	0.0
1990	Pb	20.0	16.2	80.0	n.d.	40.0	40.0	30.0	20.0	60	20.0
	Ni			10.0	n.d.					60	98.3
	Cr			10.0	n.d.					60	88.3
	Cd	0.5	1.0	3.0	n.d.	3.0	2.0	0.5	n.d.	60	75.0
	Mn	50.0	27.0	150.0	n.d.	95.0	90.0	60.0	50.0	60	1.7
1991	Pb	21.5	14.6	70.0	n.d.	50.0	40.0	30.0	20.0	54	16.7
	Ni			10.0	n.d.					54	94.4
	Cr			20.0	n.d.					54	83.3
	Cd	0.5	1.0	4.0	n.d.	3.0	2.0	1.0	n.d.	54	72.2
	Mn	39.1	20.1	110.0	n.d.	70.0	60.0	50.0	40.0	54	3.7
1992	Pb	31.4	36.3	200.0	n.d.	150.0	60.0	30.0	20.0	57	10.5
	Ni			10.0	n.d.					57	98.2
	Cr	2.5	5.1	20.0	n.d.	10.0	10.0	n.d.	n.d.	57	78.9
	Cd	0.6	1.1	5.0	n.d.	3.0	2.0	1.0	n.d.	57	73.7
	Mn	40.9	17.9	120.0	10.0	70.0	60.0	50.0	40.0	57	0.0

TABLE VII (Continued) ng/m^3

site 12047 - Dougall Avenue (Dorwin Plaza)

12047		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1988	Pb	47.3	23.9	140.0	10.0	80.0	80.0	60.0	40.0	56	0.0
	Ni	5.7	15.2	110.0	n.d.	20.0	10.0	10.0	n.d.	56	64.3
	Cr			n.d.	10.0					56	85.7
	Cd	1.5	2.2	12.0	n.d.	6.0	5.0	2.0	1.0	56	41.1
	Mn	59.8	33.4	150.0	20.0	130.0	110.0	80.0	50.0	56	0.0
1989	Pb	28.0	18.3	110.0	n.d.	50.0	50.0	30.0	30.0	51	9.8
	Ni	3.7	8.2	50.0	n.d.	10.0	10.0	10.0	n.d.	51	72.5
	Cr	3.3	6.8	30.0	n.d.	20.0	10.0	n.d.	n.d.	51	76.5
	Cd	1.0	1.8	12.0	n.d.	3.0	2.0	2.0	0.0	51	52.9
	Mn	43.3	22.7	110.0	10.0	90.0	70.0	50.0	40.0	51	0.0
1990	Pb	15.5	15.2	70.0	n.d.	40.0	30.0	20.0	15.0	58	34.5
	Ni	Not Detected by MOEE at This Site in 1990								58	100
	Cr			20.0	n.d.					58	84.5
	Cd	0.4	0.7	2.0	n.d.	2.0	2.0	n.d.	n.d.	58	77.6
	Mn	40.9	22.9	100.0	n.d.	90.0	70.0	60.0	40.0	58	1.7
1991	Pb	22.3	26.0	160.0	n.d.	70.0	50.0	30.0	20.0	56	26.8
	Ni			10.0	n.d.					55	98.2
	Cr			10.0	n.d.					55	89.1
	Cd	0.7	1.2	4.0	n.d.	3.0	3.0	1.0	n.d.	55	70.9
	Mn	34.8	20.3	90.0	n.d.	80.0	60.0	50.0	30.0	56	1.8
1992	Pb	30.7	68.0	450.0	n.d.	80.0	40.0	30.0	20.0	58	20.7
	Ni			10.0	n.d.					58	98.3
	Cr			20.0	n.d.					58	84.5
	Cd	0.8	1.2	4.0	n.d.	4.0	3.0	2.0	n.d.	58	63.8
	Mn	30.7	17.8	80.0	n.d.	70.0	50.0	40.0	30.0	58	3.4

TABLE VII (Continued) ng/m^3

site 12049 - 643 Alexandrine

12049		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1988	Pb	60.5	29.7	160.0	10.0	110.0	100.0	75.0	60.0	60	0.0
	Ni			20.0	n.d.					60	80.0
	Cr			10.0	n.d.					60	95.0
	Cd	1.2	1.5	6.0	n.d.	5.0	3.0	2.0	1.0	60	41.7
	Mn	54.2	33.3	160.0	10.0	120.0	105.0	70.0	40.0	60	0.0
1989	Pb	41.0	21.1	90.0	n.d.	80.0	70.0	60.0	40.0	59	5.1
	Ni			20.0	n.d.					59	96.6
	Cr			10.0	n.d.					59	93.2
	Cd	1.4	1.8	11.0	n.d.	4.0	3.0	2.0	1.0	59	37.3
	Mn	41.7	22.8	110.0	10.0	90.0	80.0	50.0	40.0	59	0.0
1990	Pb	20.7	24.1	110.0	n.d.	90.0	40.0	30.0	20.0	57	29.8
	Ni			10.0	n.d.					57	94.7
	Cr			30.0	n.d.					57	84.2
	Cd	0.5	0.8	3.0	n.d.	2.0	2.0	1.0	n.d.	57	68.4
	Mn	39.8	22.9	100.0	n.d.	80.0	80.0	50.0	40.0	57	5.3
1991	Pb	22.5	18.1	100.0	n.d.	60.0	40.0	30.0	20.0	57	17.5
	Ni			10.0	n.d.					57	94.7
	Cr			30.0	n.d.					57	89.5
	Cd			3.0	n.d.					57	82.5
	Mn	32.3	19.3	80.0	n.d.	70.0	60.0	40.0	30.0	57	5.3
1992	Pb	19.7	13.4	60.0	n.d.	40.0	30.0	30.0	20.0	59	18.6
	Ni			10.0	n.d.					59	91.5
	Cr	4.2	7.2	20.0	n.d.	20.0	20.0	10.0	n.d.	59	71.2
	Cd	0.8	1.2	4.0	n.d.	3.0	3.0	2.0	n.d.	59	64.4
	Mn	31.9	18.3	80.0	n.d.	70.0	60.0	40.0	30.0	59	6.8

TABLE VIII Metals Data: All Windsor Sites 1988-1991 Combined (ng/m^3).

	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
Pb	40.4	36.1	340.0	n.d.	100.0	80.0	50.0	30.0	3181	12.1
Ni	4.0	14.9	350.0	n.d.	20.0	10.0	n.d.	n.d.	2839	79.2
Cr	6.0	11.5	140.0	n.d.	30.0	20.0	10.0	n.d.	2838	66.8
Cd	1.6	3.0	91.0	n.d.	6.0	4.0	2.0	1.0	2840	47.7
Mn	72.1	90.9	1350	n.d.	180.0	130.0	80.0	50.0	2841	1.7

Results from monitoring for metals in the Detroit area are presented in Tables IX and X. Table IX shows MDNR/WCAPCD results from six sites for five years. Note that Station 32 shut down in 1990 and that Station 34 was moved in 1989 to Station 35 (Both sites on Grosse Ile). Table X shows results from two sites operated by Roy F. Weston for the Greater Detroit Resource Recovery Authority. Data are from 1988, 1989, and 1990 and all metals on the target list except beryllium are reported. Mercury (Hg) results are for particulate mercury.

TABLE IX Arithmetic Mean for Five Years of Metals Monitoring in the Detroit Area (ng/m^3).

Site	Year	Be	Cd	Cr	Pb	Hg	Ni
01	1987	0.36	2.8	12	50	0.20	10
	1988	0.48	1.5	5	40	0.20	8
	1989	0.10	2.8	7	40	0.25	14
	1990	0.10	2.0	6	30	0.18	8
	1991	0.08	1.8	6	30	0.25	15
04	1987	0.39	6.0	15	60	0.20	10
	1988	0.90	2.3	5	30	0.20	10
	1989	0.09	4.4	9	50	0.24	18
	1990	0.11	3.0	8	40	0.20	12
	1991	0.08	2.6	6	30	0.25	10
05	1987	0.46	9.8	20	90	0.30	19
	1988	0.84	6.5	8	70	0.30	10
	1989	0.09	4.7	11	100	0.30	19
	1990	0.13	4.0	9	50	0.20	11
	1991	0.12	6.1	14	50	0.30	12
06	1987	0.21	2.8	16	40	0.30	10
	1988	0.62	1.7	5	30	0.20	5
	1989	0.07	3.0	7	40	0.19	13
	1990	0.08	1.5	7	20	0.22	9
	1991	0.07	1.5	7	20	0.19	13
32	1987	0.36	5.3	25	80	0.30	14
	1988	1.27	4.8	13	100	0.30	13
	1989	0.07	6.0	14	69	0.30	16
	1990	0.21 (5 mo.)	5.0 (5 mo.)	17 (5 mo.)	71 (5 mo.)	0.30 (5 mo.)	30 (5 mo.)
	1991	no data	no data	no data	no data	no data	no data
34	1987	0.20	3.0	13	50	0.20	8
34	1988	0.64	2.5	22	40	0.20	7
35	1989	0.07	3.1	6	30	0.20	11
35	1990	0.09	1.5	8	40	0.20	13
35	1991	0.05	1.2	6	20	0.20	9

TABLE X Summary Statistics for Metals Monitored by Roy F. Weston Inc.; Playground Site (Grandy and Medbury Streets) in Detroit (ng/m^3).

		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1988	As	3.23	1.72	7.66	n.d.	5.82	5.34	4.64	3.63	60	<80
	Cd			5.80	n.d.					60	≥80
	Cr	3.28	2.87	12.91	n.d.	8.99	6.76	4.63	2.71	60	<80
	Hg			0.83	n.d.					60	≥80
	Mn	20.91	15.45	70.77	1.03	55.03	42.62	28.57	16.56	60	<80
	Ni	3.88	2.58	14.45	n.d.	8.69	6.63	4.95	3.55	60	<80
	Pb	29.49	19.55	96.67	4.20	72.26	54.69	40.59	24.53	60	<80
1989	As			6.48	n.d.					61	≥80
	Cd			36.80	n.d.					61	≥80
	Cr	3.52	3.11	19.59	n.d.	10.10	6.11	3.87	2.63	61	<80
	Hg			0.71	n.d.					61	≥80
	Mn	20.42	16.47	81.41	4.26	52.54	48.25	26.12	14.79	61	<80
	Ni	3.63	4.76	35.62	n.d.	8.97	7.13	4.17	2.57	61	<80
	Pb	31.73	17.80	79.90	8.09	70.29	56.86	38.57	27.28	60	<80
1990	As			1.67	n.d.					58	≥80
	Cd			16.93	n.d.					58	≥80
	Cr	1.87	1.33	5.84	n.d.	5.48	3.80	2.56	1.55	58	<80
	Hg	Not Detected by Weston at This Site in 1990								58	100
	Mn	10.94	10.85	49.70	n.d.	36.40	28.15	14.23	8.05	58	<80
	Ni	1.22	1.98	13.03	n.d.	4.35	2.28	1.60	0.49	58	<80
	Pb	21.19	24.02	142.40	n.d.	56.15	43.37	29.13	13.75	58	<80

c.l. is censoring level

for c.l. ≥ 80% only the maximum and minimum concentrations are reported

for c.l. < 80% all non-detects are replaced with half the d.l. before calculating statistics

TABLE X (Continued) Summary Statistics for Metals Monitored by Roy F. Weston Inc.; Background Site at I-94 Service Drive at Grande Detroit (ng/m^3).

		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1988	As	2.89	1.65	6.34	n.d.	5.49	4.98	4.22	3.18	59	<80
	Cd			3.31	n.d.					59	≥80
	Cr	1.93	1.65	6.86	n.d.	5.02	4.53	2.99	1.56	59	<80
	Hg			0.30	n.d.					59	≥80
	Mn	15.31	12.80	49.77	n.d.	45.79	39.95	21.54	11.36	59	<80
	Ni	2.93	1.91	9.22	0.41	7.27	5.81	3.60	2.60	59	<80
	Pb	22.19	16.34	69.42	n.d.	51.51	47.98	30.73	19.00	59	<80
1989	As	1.46	0.88	4.06	n.d.	3.24	2.78	n.d.	n.d.	59	<80
	Cd			75.88	n.d.					59	≥80
	Cr	1.70	1.76	8.16	n.d.	6.57	3.64	2.12	1.22	59	<80
	Hg			1.76	n.d.					59	≥80
	Mn	14.31	12.46	61.65	2.01	48.82	30.19	19.61	10.23	59	<80
	Ni	2.26	2.22	11.77	n.d.	7.88	4.81	2.69	1.61	59	<80
	Pb	21.33	13.77	71.83	n.d.	51.05	40.39	28.18	19.62	59	<80
1990	As			2.73	n.d.					58	≥80
	Cd			16.66	n.d.					58	≥80
	Cr	1.34	0.91	4.46	n.d.	2.98	2.81	1.87	1.17	58	<80
	Hg			0.32	n.d.					58	≥80
	Mn	9.63	9.27	44.27	n.d.	26.25	21.89	14.78	6.97	58	<80
	Ni	0.93	1.92	13.85	n.d.	2.99	2.19	1.29	n.d.	58	<80
	Pb	13.96	11.55	52.31	n.d.	39.61	28.25	18.47	11.20	58	<80

c.l. is censoring level

for c.l. ≥ 80% only the maximum and minimum concentrations are reported

for c.l. < 80% all non-detects are replaced with half the d.l. before calculating statistics

Results from sampling for arsenic and beryllium at two sites in Windsor are presented in Table XI. Both samplers were installed specifically for the Windsor Air Quality Study. Calendar year statistics are not available; results are shown for the period March 1992 to March 1993. Note that beryllium is virtually absent in the ambient air at the detection limits of the analytical method used.

TABLE XI Arsenic & Beryllium (ng/m^3) at 12007 and 12008 From March 1992 to March 1993.

12007	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
As	1.47	0.78	3.94	0.28	2.53	2.39	2.03	1.32	27	0.0
Be			0.14	n.d.					28	89.3
12008	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
As	1.36	0.84	4.26	0.37	2.28	2.25	1.79	1.36	27	0.0
Be			0.09	n.d.					27	96.3

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% all non-detects are replaced with 0.0 before calculating statistics

As well as determining trace metals from Hi-Vol samplers, MOEE also operates size-selective samplers (PM_{10}) for trace metal determination. Summary statistics for trace metals from PM_{10} monitoring in the Windsor area are presented in Table XII. Results from both MOEE and ECC&P monitoring efforts are presented. Table XIII shows ECC&P results from the Walpole Island site.

MOEE cadmium (Cd) results are unreliable and are not reported.

TABLE XII Metals from PM10 - MOEE (ng/m^3)
12008 - University Avenue

1990	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
Pb	20.6	15.8	50.0	n.d.	50.0	40.0	30.0	20.0	54	25.9
Ni	4.9	3.4	13.0	n.d.	10.00	9.0	7.0	5.0	54	22.2
Cr	7.3	5.6	21.0	n.d.	18.00	16.0	11.0	6.0	54	14.8
Mn	22.4	14.8	60.0	n.d.	60.0	40.0	30.0	20.0	54	1.9
1991	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
Pb	20.8	26.9	170.0	n.d.	50.0	45.0	30.0	20.0	60	33.3
Ni	5.3	4.5	17.0	n.d.	14.0	13.0	8.5	4.5	60	25.0
Cr	8.2	5.0	21.0	n.d.	18.0	15.0	11.0	8.0	60	6.7
Mn	21.0	12.3	65.0	4.0	42.0	36.5	29.0	19.0	60	0.0
1992	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
Pb	11.1	15.3	80.0	n.d.	40.0	30.0	20.0	n.d.	61	50.8
Ni	2.2	3.7	18.0	n.d.	10.0	7.0	4.0	n.d.	61	63.9
Cr	3.4	3.3	14.0	n.d.	9.0	8.0	6.0	3.0	61	36.1
Mn	14.1	8.8	37.0	n.d.	31.0	26.0	18.0	13.0	61	3.3

c.l. is censoring level
for c.l. < 80% all non-detects are replaced with 0.0 before calculating statistics

TABLE XII (Continued) Metals from PM10 - ECC&P (ng/m^3)
12008 - University Avenue

1987	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
Pb	75.3	27.1	144.8	38.1	138.9	98.5	86.3	76.6	23	0.0
Ni	4.4	2.3	10.0	n.d.	9.3	6.6	5.7	4.1	23	4.3
Cr	12.5	6.9	28.9	n.d.	22.6	20.7	15.9	13.2	23	4.3
Cd			5.5	n.d.					23	82.6
Mn	32.7	17.4	66.1	8.8	56.9	56.2	48.5	31.0	23	0.0
As	0.3	0.5	1.5	n.d.	1.3	1.2	0.8	n.d.	23	73.9
1988	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
Pb	61.5	28.5	138.9	15.1	124.5	96.4	78.8	53.5	54	0.0
Ni	2.4	2.5	10.7	n.d.	8.0	5.1	3.6	2.3	54	33.3
Cr	3.9	4.6	18.1	n.d.	12.4	10.4	6.9	3.2	54	46.3
Cd	5.0	4.5	17.1	n.d.	14.7	12.7	7.6	4.8	54	24.1
Mn	32.6	23.2	114.2	2.4	82.9	67.9	39.4	26.7	54	0.0
As	1.4	1.0	3.8	n.d.	3.4	2.6	2.0	1.2	54	20.4
1989	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
Pb	39.3	17.6	97.3	7.4	73.9	63.6	50.5	37.8	56	0.0
Ni	4.4	10.6	77.0	n.d.	11.6	8.4	4.3	1.9	56	32.1
Cr	3.2	4.1	14.1	n.d.	11.6	9.8	5.5	n.d.	56	55.6
Cd	4.5	3.9	14.6	n.d.	11.9	10.5	7.2	3.5	56	25.0
Mn	27.2	17.4	118.7	3.5	56.0	41.1	33.6	26.6	56	0.0
As	1.0	0.9	4.3	n.d.	2.8	2.0	1.4	1.0	56	30.4

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% all non-detects are replaced with 0.0 before calculating statistics

TABLE XII (Continued) Metals from PM10 - ECC&P (ng/m^3)
12008 - University Avenue

1990	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
Pb	23.2	11.4	51.6	7.6	43.5	40.7	31.1	19.9	54	0.0
Ni	1.1	1.5	5.0	n.d.	4.3	3.7	1.8	n.d.	54	59.3
Cr	1.9	2.5	6.8	n.d.	6.0	5.6	4.4	n.d.	54	61.1
Cd	2.3	2.9	12.2	n.d.	7.8	6.1	3.9	1.9	54	48.1
Mn	26.1	15.9	68.8	n.d.	66.0	52.8	31.6	23.7	54	1.9
As	0.6	0.8	3.5	n.d.	2.0	1.6	1.1	n.d.	54	51.9
1991	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
Pb	28.3	18.1	102.7	5.9	55.6	51.0	31.4	24.2	46	0.0
Ni	1.6	1.9	7.1	n.d.	5.6	3.6	3.0	1.2	46	45.7
Cr	2.5	2.7	19.9	n.d.	6.9	6.1	4.4	n.d.	46	56.5
Cd	2.5	3.4	13.7	n.d.	10.7	6.6	3.7	1.0	46	50.0
Mn	25.5	15.0	62.7	2.1	53.2	45.8	35.7	20.7	46	0.0
As	0.8	1.4	7.5	n.d.	2.3	2.0	1.3	n.d.	46	54.3
07/87 to 11/91	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
Pb	42.1	27.2	14.5	5.9	96.3	82.2	53.3	36.6	233	0.0
Ni	2.6	5.6	77.0	n.d.	8.0	5.6	3.5	1.7	233	38.6
Cr	3.8	5.1	28.9	n.d.	14.3	11.4	5.6	3.1	233	49.4
Cd	3.3	3.8	17.1	n.d.	11.3	8.7	5.6	2.5	233	40.8
Mn	28.4	18.3	118.7	n.d.	66.0	53.6	36.0	24.5	233	0.4
As	0.9	1.0	7.5	n.d.	2.6	2.0	1.5	0.8	233	42.1

c.l. is censoring level
for c.l. < 80% all non-detects are replaced with 0.0 before calculating statistics

TABLE XII (Continued) Metals from PM10 - ECC&P (ng/m^3)
12016 - College & South Streets

1990	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
Pb	23.5	12.1	70.7	2.1	38.4	34.6	30.2	22.7	34	0.0
Ni	2.2	3.5	19.0	n.d.	7.2	4.3	3.5	1.4	34	38.2
Cr	1.9	2.9	10.4	n.d.	8.9	6.3	3.9	n.d.	34	61.8
Cd	1.0	1.7	6.5	n.d.	5.2	2.7	2.0	n.d.	34	67.7
Mn	40.4	29.3	120.4	3.6	94.3	83.3	53.9	30.9	34	0.0
As	0.6	0.8	3.4	n.d.	1.8	1.6	0.9	0.6	34	47.1
1991	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
Pb	20.9	7.8	40.1	4.5	36.4	33.3	25.9	19.7	50	0.0
Ni	2.1	5.7	39.7	n.d.	5.1	4.1	2.5	1.2	50	48.0
Cr	7.9	41.5	295.0	n.d.	8.3	6.3	4.1	n.d.	50	58.0
Cd	1.4	2.2	8.8	n.d.	6.4	4.4	2.4	n.d.	50	62.0
Mn	33.5	26.3	112.9	2.3	86.8	67.9	44.8	23.3	50	0.0
As	0.6	1.0	4.3	n.d.	2.7	2.0	0.8	n.d.	50	62.0
05/90 to 11/91	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
Pb	21.9	9.8	70.7	2.1	36.8	33.8	26.3	19.9	84	0.0
Ni	2.2	4.9	39.7	n.d.	5.1	4.2	2.6	1.4	84	44.1
Cr	5.5	32.1	295.0	n.d.	8.3	6.3	4.1	n.d.	84	59.5
Cd	1.3	2.0	8.8	n.d.	5.4	4.3	2.4	n.d.	84	64.3
Mn	36.3	27.6	120.4	2.3	92.4	81.5	52.9	28.3	84	0.0
As	0.6	0.9	4.3	n.d.	2.4	1.8	0.9	n.d.	84	55.9

c.l. is censoring level
for c.l. < 80% all non-detects are replaced with 0.0 before calculating statistics

TABLE XII (Continued) Metals from PM10 - MOEE (ng/m^3)

12056 - St. Gabriel School

1992	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
Pb	4.0	7.6	20.0	n.d.	20.0	20.0	n.d.	n.d.	50	76.0
Ni	3.1	3.6	15.0	n.d.	9.0	8.0	5.0	3.0	50	46.0
Cr	1.5	2.0	6.0	n.d.	6.0	4.0	3.0	n.d.	50	62.0
Mn	10.3	6.9	43.0	n.d.	21.0	17.0	14.0	10.0	50	6.0

12057 - George P. Vanier School

1992	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
Pb	11.9	12.0	60.0	n.d.	30.0	20.0	20.0	10.0	59	40.7
Ni	3.5	3.8	18.0	n.d.	10.0	8.0	6.0	3.0	59	39.0
Cr	2.1	2.3	7.0	n.d.	6.0	6.0	4.0	2.0	59	45.8
Mn	11.9	11.3	71.0	n.d.	36.0	23.0	15.0	10.0	59	10.2

c.l. is censoring level
for c.l. < 80% all non-detects are replaced with 0.0 before calculating statistics

TABLE XIII Metals from PM10 - ECC&P (ng/m^3)
Walpole Island

1988	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
Pb	14.3	10.3	52.4	1.3	40.6	24.8	18.3	11.7	38	0.0
Ni	0.6	1.7	9.6	n.d.	2.8	2.2	n.d.	n.d.	38	78.9
Cr			6.3	n.d.					38	92.1
Cd	1.3	2.1	6.3	n.d.	6.2	5.3	2.4	n.d.	38	68.4
Mn	7.8	7.6	35.4	n.d.	26.5	16.7	11.9	6.3	38	21.1
As	0.4	0.6	1.8	n.d.	1.6	1.3	0.9	n.d.	38	57.9
1989	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
Pb	11.5	8.5	47.5	1.5	22.8	18.9	13.9	9.3	46	0.0
Ni	0.6	1.5	6.2	n.d.	4.8	1.5	n.d.	n.d.	46	78.3
Cr			20.3	n.d.					46	89.1
Cd	2.5	2.9	8.2	n.d.	7.3	6.9	5.5	n.d.	46	52.2
Mn	7.6	10.1	50.2	n.d.	32.6	18.2	9.1	4.8	46	23.9
As	0.4	0.7	3.3	n.d.	1.9	1.3	0.7	n.d.	46	60.9
1990	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
Pb	11.0	9.2	47.9	1.3	24.8	20.2	14.6	9.9	49	0.0
Ni			12.7	n.d.					49	81.6
Cr			3.3	n.d.					49	91.8
Cd	1.2	1.8	7.4	n.d.	4.9	4.4	2.5	n.d.	49	65.3
Mn	7.6	8.5	42.1	n.d.	20.8	17.3	10.4	6.1	49	22.5
As	0.2	0.5	2.3	n.d.	0.9	0.7	n.d.	n.d.	49	79.6

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% all non-detects are replaced with 0.0 before calculating statistics

TABLE XIII (Continued) Metals from PM10 - ECC&P (ng/m^3)
Walpole Island

1991	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
Pb	13.6	7.4	30.7	2.2	27.6	22.9	19.3	12.7	49	0.0
Ni	1.0	2.0	10.0	n.d.	3.6	3.3	1.4	n.d.	49	65.3
Cr			6.0	n.d.					49	81.6
Cd	0.9	1.8	9.0	n.d.	4.3	3.6	1.7	n.d.	49	73.5
Mn	9.7	7.8	30.4	n.d.	28.7	21.0	13.1	8.3	49	12.2
As	0.3	0.5	2.2	n.d.	1.3	1.1	0.5	n.d.	49	73.5
01/88 to 11/91	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
Pb	12.5	8.8	52.4	1.3	27.6	22.6	16.5	11.0	182	0.0
Ni	0.7	1.8	12.7	n.d.	3.6	2.3	n.d.	n.d.	182	75.8
Cr			12.3	n.d.					182	88.5
Cd	1.5	2.3	9.0	n.d.	6.2	5.2	2.5	n.d.	182	64.3
Mn	8.2	8.6	50.2	n.d.	26.8	17.1	11.0	6.1	182	19.8
As	0.3	0.6	3.3	n.d.	1.5	1.1	0.6	n.d.	182	69.2

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% all non-detects are replaced with 0.0 before calculating statistics

5.2 Volatile Organic Compounds

Summary statistics for volatile organic compounds are presented in Tables XIV (Windsor), XV (Detroit), and XVI (Walpole Island). For Windsor and Walpole Island sites, non-detect results are treated differently depending upon the monitoring agency. For all MOEE volatile organic compound results non-detects are replaced with half the detection limit before calculating summary statistics. All non-detects in the ECC&P data are replaced with 0.0 before calculating statistics.

In Table XV (Detroit) only the average concentration is reported because the raw data are not available for calculating other summary statistics. In this table, a "minimum average" has been calculated by setting all non-detects equal to 0.0. A second, "maximum average" was then determined by setting all non-detects equal to the detection limit.

TABLE XIV Summary Statistics for Volatile Organic Compounds: Windsor ($\mu g/m^3$)

Windsor 12007 (MOEE) - 1990	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Benzene	0.99	0.63	2.20	n.d.	2.20	1.90	0.90	11	<80
Butadiene,1,3	Not Detected by MOEE at This Site in 1990							11	100
Ethylene dibromide	Not Detected by MOEE at This Site in 1990							11	100
Dichlorobenzene,para	Not Detected by MOEE at This Site in 1990							11	100
Ethylene dichloride	Not Detected by MOEE at This Site in 1990							11	100
Methylene chloride			1.00	n.d.				11	≥80
Formaldehyde	Not Measured by MOEE at This Site in 1990								
Perchloroethylene			0.60	n.d.				11	≥80
Carbon tetrachloride	Not Detected by MOEE at This Site in 1990							11	100
Trichloroethylene	Not Detected by MOEE at This Site in 1990							11	100
Chloroform	Not Detected by MOEE at This Site in 1990							11	100
Vinyl chloride	Not Detected by MOEE at This Site in 1990							11	100

c.l. . is censoring level
for c.l. ≥ 80% only the maximum and minimum concentrations are reported
for c.l. < 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics
ECC&P: all non-detects are replaced with 0.0 before calculating statistics

Note the small sample size: this station began operation in late June.

TABLE XIV (Continued) $\mu g/m^3$

Windsor 12007 (MOEE) - 1991	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Benzene	1.80	0.93	4.00	0.60	3.30	3.20	1.40	21	<80
Butadiene,1,3	0.12	0.11	0.40	n.d.	0.30	0.30	n.d.	23	<80
Ethylene dibromide	Not Detected by MOEE at This Site in 1991							23	100
Dichlorobenzene,para	0.18	0.27	1.00	n.d.	0.80	0.50	n.d.	22	<80
Ethylene dichloride			0.20	n.d.				23	≥80
Methylene chloride	0.47	0.79	3.70	n.d.	1.20	0.90	n.d.	22	<80
Formaldehyde	Not Measured by MOEE at This Site in 1991								
Perchloroethylene	0.43	0.33	1.50	n.d.	0.90	0.80	0.40	23	<80
Carbon tetrachloride			2.30	n.d.				23	≥80
Trichloroethylene	0.19	0.23	0.80	n.d.	0.70	0.50	n.d.	23	<80
Chloroform			1.20	n.d.				23	≥80
Vinyl chloride	Not Detected by MOEE at This Site in 1991							23	100

c.l. is censoring level
for c.l. ≥ 80% only the maximum and minimum concentrations are reported
for c.l. < 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics
ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XIV (Continued) $\mu g/m^3$

Windsor 12007 (MOEE) - 1992	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Benzene	1.89	1.31	6.80	0.30	4.80	2.60	1.60	26	0.0
Butadiene,1,3	0.15	0.12	0.40	n.d.	0.40	0.30	n.d.	26	50.0
Ethylene dibromide			0.50	n.d.				26	92.3
Dichlorobenzene,para			0.80	n.d.				26	80.8
Ethylene dichloride			0.20	n.d.				26	92.3
Methylene chloride	4.12	9.44	44.4	n.d.	23.00	9.60	1.05	26	15.4
Formaldehyde	Not Measured by MOEE at This Site in 1992								
Perchloroethylene	0.67	0.54	2.80	n.d.	1.40	1.30	0.50	26	3.9
Carbon tetrachloride	0.80	0.58	2.00	n.d.	1.80	1.70	n.d.	26	65.4
Trichloroethylene	0.27	0.28	1.20	n.d.	0.80	0.60	0.20	26	42.3
Chloroform	0.37	0.38	1.90	n.d.	0.70	0.70	n.d.	26	61.5
Vinyl chloride	Not Detected by MOEE at This Site in 1992							26	100

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics
ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XIV (Continued) $\mu g/m^3$

Windsor 12008 (ECC&P) - 1988	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Benzene	3.69	1.82	8.14	1.41	7.33	6.79	3.22	38	<80
Butadiene,1,3	0.30	0.23	1.10	n.d.	0.97	0.59	0.24	38	<80
Ethylene dibromide	Not Detected by ECC&P at This Site in 1988							10	100
Dichlorobenzene,para	2.16	1.04	3.62	n.d.	3.62	3.62	2.11	10	<80
Ethylene dichloride	0.09	0.02	0.12	0.06	0.12	0.12	0.09	10	<80
Methylene chloride	1.36	1.25	4.59	0.58	4.59	4.59	0.86	10	<80
Formaldehyde	Not Measured by ECC&P at This Site in 1988								
Perchloroethylene	0.39	0.58	2.01	n.d.	2.01	2.01	0.22	10	<80
Carbon tetrachloride	0.46	0.07	0.59	0.38	0.59	0.59	0.43	10	<80
Trichloroethylene	0.34	0.13	0.63	0.20	0.63	0.63	0.31	10	<80
Chloroform	0.14	0.07	0.32	0.09	0.32	0.32	0.12	10	<80
Vinyl chloride			0.06	n.d.				10	≥80

c.l. is censoring level
for c.l. ≥ 80% only the maximum and minimum concentrations are reported
for c.l. < 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics
ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XIV (Continued) $\mu g/m^3$

Windsor 12008 (ECC&P) - 1989	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Benzene	3.23	2.10	11.65	0.14	8.05	5.62	2.71	57	<80
Butadiene,1,3	0.30	0.25	1.38	0.08	1.02	0.47	0.23	57	<80
Ethylene dibromide			0.42	n.d.				56	≥80
Dichlorobenzene,para	3.27	2.63	14.60	n.d.	7.44	6.93	2.39	55	<80
Ethylene dichloride	0.13	0.10	0.55	n.d.	0.27	0.23	0.13	57	<80
Methylene chloride	1.94	2.30	12.76	0.54	7.27	3.16	1.05	35	<80
Formaldehyde	2.79	1.03	4.56	1.50	4.56	4.56	2.54	8	<80
Perchloroethylene	1.20	1.09	4.77	n.d.	3.49	2.76	0.71	56	<80
Carbon tetrachloride	0.88	0.27	1.45	0.41	1.39	1.28	0.85	57	<80
Trichloroethylene	0.27	0.12	0.55	n.d.	0.50	0.40	0.26	57	<80
Chloroform	0.19	0.09	0.40	n.d.	0.34	0.30	0.16	57	<80
Vinyl chloride			0.62	n.d.				57	≥80

c.l. is censoring level
for c.l. ≥ 80% only the maximum and minimum concentrations are reported
for c.l. < 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics
ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XIV (Continued) $\mu g/m^3$

Windsor 12008 (ECC&P) - 1990	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Benzene	3.23	1.69	9.19	0.87	7.32	4.89	2.77	58	<80
Butadiene,1,3	0.20	0.18	1.16	n.d.	0.45	0.36	0.17	58	<80
Ethylene dibromide			0.10	n.d.				57	≥80
Dichlorobenzene,para	0.77	0.49	2.59	0.17	1.88	1.49	0.63	57	<80
Ethylene dichloride	0.08	0.06	0.23	n.d.	0.17	0.16	0.10	57	<80
Methylene chloride	1.21	0.85	4.95	0.48	2.97	2.11	1.04	56	<80
Formaldehyde	1.78	1.40	8.30	0.36	4.84	3.28	1.46	56	<80
Perchloroethylene	0.85	0.72	3.13	n.d.	2.67	2.02	0.61	57	<80
Carbon tetrachloride	0.92	0.15	1.22	0.64	1.17	1.14	0.95	57	<80
Trichloroethylene	0.38	0.20	1.12	n.d.	0.71	0.66	0.33	57	<80
Chloroform	0.17	0.10	0.52	n.d.	0.39	0.28	0.15	57	<80
Vinyl chloride			0.16	n.d.				57	≥80

c.l. is censoring level
for c.l. ≥ 80% only the maximum and minimum concentrations are reported
for c.l. < 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics
ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XIV (Continued) $\mu g/m^3$

Windsor 12008 (ECC&P) - 1991	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Benzene	3.00	1.63	8.31	1.14	6.10	5.20	2.46	49	<80
Butadiene,1,3	0.24	0.18	1.06	0.09	0.62	0.51	0.19	49	<80
Ethylene dibromide	Not Detected by ECC&P at This Site in 1991							49	100
Dichlorobenzene,para	0.85	1.15	6.49	0.03	2.76	2.15	0.47	49	<80
Ethylene dichloride	0.17	0.38	2.27	n.d.	0.34	0.29	0.09	49	<80
Methylene chloride	1.65	1.74	9.92	0.51	4.87	3.45	1.05	49	<80
Formaldehyde	3.98	3.60	25.06	0.89	7.60	6.82	2.84	51	<80
Perchloroethylene	0.54	0.32	1.45	0.10	1.12	0.95	0.48	49	<80
Carbon tetrachloride	0.92	0.32	2.10	0.53	1.53	1.49	0.86	49	<80
Trichloroethylene	0.60	0.77	4.89	n.d.	1.82	1.25	0.35	49	<80
Chloroform	0.25	0.26	1.32	0.09	0.84	0.43	0.16	49	<80
Vinyl chloride			0.09	n.d.				49	≥80

c.l. is censoring level
for c.l. ≥ 80% only the maximum and minimum concentrations are reported
for c.l. < 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics
ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XIV (Continued) $\mu g/m^3$

Windsor 12008 (MOEE) - 1990	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Benzene	3.70	2.21	8.50	0.10	8.30	8.30	3.40	23	<80
Butadiene,1,3	0.17	0.12	0.50	n.d.	0.40	0.30	0.10	23	<80
Ethylene dibromide	Not Detected by MOEE at This Site in 1990							23	100
Dichlorobenzene,para	0.82	1.01	4.10	n.d.	3.10	1.60	0.60	22	<80
Ethylene dichloride			0.30	n.d.				23	≥80
Methylene chloride	1.21	1.22	5.30	0.10	3.20	2.70	1.00	23	<80
Formaldehyde	Not Measured by MOEE at This Site in 1990								
Perchloroethylene	1.35	1.27	5.60	n.d.	4.30	2.20	0.90	23	<80
Carbon tetrachloride			8.50	n.d.				23	≥80
Trichloroethylene	0.63	0.52	1.50	n.d.	1.40	1.30	0.80	23	<80
Chloroform			1.40	n.d.				23	≥80
Vinyl chloride	Not Detected by MOEE at This Site in 1990							23	100

c.l. is censoring level
for c.l. ≥ 80% only the maximum and minimum concentrations are reported
for c.l. < 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics
ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XIV (Continued) $\mu g/m^3$

Windsor 12008 (MOEE) - 1991	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Benzene	2.18	1.09	4.10	n.d.	4.10	3.70	1.90	24	<80
Butadiene,1,3	0.17	0.16	0.60	n.d.	0.50	0.30	n.d.	23	<80
Ethylene dibromide	Not Detected by MOEE at This Site in 1991							24	100
Dichlorobenzene,para	0.25	0.43	1.70	n.d.	1.30	0.80	n.d.	24	<80
Ethylene dichloride			0.30	n.d.				24	≥80
Methylene chloride	0.65	0.72	2.60	n.d.	1.60	1.50	n.d.	22	<80
Formaldehyde	Not Measured by MOEE at This Site in 1991								
Perchloroethylene	0.87	0.53	1.90	n.d.	1.80	1.80	0.80	24	<80
Carbon tetrachloride			3.10	n.d.				24	≥80
Trichloroethylene	0.21	0.30	1.10	n.d.	0.90	0.80	n.d.	24	<80
Chloroform	0.37	0.34	1.10	n.d.	1.10	0.80	n.d.	23	<80
Vinyl chloride	Not Detected by MOEE at This Site in 1991							24	100

c.l. is censoring level
for c.l. ≥ 80% only the maximum and minimum concentratons are reported
for c.l. < 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics
ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XIV (Continued) $\mu g/m^3$

Windsor 12008 (MOEE) - 1992	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Benzene	1.89	0.80	3.80	0.20	3.70	2.80	1.90	24	0.0
Butadiene,1,3	0.24	0.10	0.50	n.d.	0.40	0.40	0.20	24	8.3
Ethylene dibromide	0.20	0.14	0.80	n.d.	0.20	0.20	0.20	24	16.7
Dichlorobenzene,para	0.18	0.07	0.40	n.d.	0.20	0.20	0.20	23	17.4
Ethylene dichloride	0.17	0.06	0.20	n.d.	0.20	0.20	0.20	24	16.7
Methylene chloride	5.36	7.10	27.6	n.d.	21.8	16.6	2.55	24	4.2
Formaldehyde	Not Measured by MOEE at This Site in 1992								
Perchloroethylene	1.03	0.59	2.40	0.20	2.00	1.90	1.10	24	0.0
Carbon tetrachloride	1.55	0.58	3.50	n.d.	2.40	2.00	1.50	24	8.3
Trichloroethylene	0.41	0.27	1.10	n.d.	0.80	0.80	0.30	24	4.2
Chloroform	0.59	0.26	1.30	n.d.	1.20	1.10	0.50	24	4.2
Vinyl chloride	0.17	0.06	0.20	n.d.	0.20	0.20	0.20	23	16.7

c.l. is censoring level
for c.l. < 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics
ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XIV (Continued) $\mu g/m^3$

Windsor 12016 (ECC&P) - 1990	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Benzene	2.66	1.70	6.62	0.74	6.62	6.29	2.30	20	<80
Butadiene,1,3	0.12	0.07	0.22	n.d.	0.22	0.21	0.12	20	<80
Ethylene dibromide			0.13	n.d.				20	≥80
Dichlorobenzene,para	0.78	0.65	2.94	0.26	2.94	1.92	0.64	20	<80
Ethylene dichloride	0.04	0.06	0.15	n.d.	0.15	0.12	n.d.	20	<80
Methylene chloride	2.21	1.08	4.91	0.51	4.91	3.80	1.87	20	<80
Formaldehyde	Not Measured by ECC&P at This Site in 1990								
Perchloroethylene	0.53	0.56	2.61	0.07	2.61	1.14	0.36	20	<80
Carbon tetrachloride	0.82	0.13	0.99	0.59	0.99	0.97	0.80	20	<80
Trichloroethylene	0.24	0.19	0.72	n.d.	0.72	0.64	0.23	20	<80
Chloroform	0.20	0.17	0.88	0.09	0.88	0.26	0.15	20	<80
Vinyl chloride			0.19	n.d.				20	≥80

c.l. is censoring level
for c.l. ≥ 80% only the maximum and minimum concentrations are reported
for c.l. < 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics
ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XIV (Continued) $\mu g/m^3$

Windsor 12016 (ECC&P) - 1991	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Benzene	2.36	1.56	7.89	0.79	7.38	3.95	1.85	38	<80
Butadiene,1,3	0.19	0.15	0.68	n.d.	0.67	0.31	0.15	38	<80
Ethylene dibromide	Not Detected by ECC&P at This Site in 1991							38	100
Dichlorobenzene,para	0.29	0.24	1.37	0.03	0.62	0.53	0.21	38	<80
Ethylene dichloride	0.11	0.31	1.59	n.d.	1.12	0.23	n.d.	38	<80
Methylene chloride	1.02	0.46	2.46	0.20	1.76	1.67	1.06	38	<80
Formaldehyde	7.88	3.72	19.15	2.75	12.72	11.87	7.99	24	<80
Perchloroethylene	0.27	0.17	0.83	n.d.	0.66	0.57	0.21	38	<80
Carbon tetrachloride	0.94	0.34	1.95	0.54	1.81	1.55	0.88	38	<80
Trichloroethylene	0.27	0.28	1.14	n.d.	0.95	0.64	0.21	38	<80
Chloroform	0.18	0.09	0.39	0.08	0.37	0.36	0.14	38	<80
Vinyl chloride			0.09	n.d.				38	≥80

c.l. is censoring level
for c.l. ≥ 80% only the maximum and minimum concentrations are reported
for c.l. < 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics
ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XIV (Continued) $\mu g/m^3$

Windsor 12056 (MOEE) - 1992	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Benzene	1.67	1.00	5.80	0.70	2.30	2.20	1.45	24	<80
Butadiene,1,3	0.10	0.12	0.60	n.d.	0.20	0.20	n.d.	24	<80
Ethylene dibromide	Not Detected by MOEE at This Site in 1992							24	100
Dichlorobenzene,para	0.41	0.29	1.00	n.d.	0.90	0.80	0.30	24	<80
Ethylene dichloride			0.20	n.d.				24	≥80
Methylene chloride	1.57	1.86	7.80	n.d.	4.70	4.10	0.90	23	<80
Formaldehyde	Not Measured by MOEE at This Site in 1992								
Perchloroethylene	0.60	0.59	3.20	0.30	1.00	0.90	0.50	24	<80
Carbon tetrachloride	0.99	1.61	8.20	n.d.	2.00	1.80	n.d.	24	<80
Trichloroethylene	0.31	0.28	0.90	n.d.	0.90	0.80	0.30	24	<80
Chloroform			0.80	n.d.				24	≥80
Vinyl chloride	Not Detected by MOEE at This Site in 1992							24	100

c.l. is censoring level
for c.l. ≥ 80% only the maximum and minimum concentrations are reported
for c.l. < 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics
ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XIV (Continued) $\mu g/m^3$

Windsor 12057 (MOEE) - 1992	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Benzene	1.40	0.73	3.00	n.d.	2.20	2.10	1.40	25	<80
Butadiene,1,3	0.11	0.09	0.30	n.d.	0.30	0.20	n.d.	25	<80
Ethylene dibromide	Not Detected by MOEE at This Site in 1992							25	100
Dichlorobenzene,para	0.39	0.45	1.70	n.d.	1.30	1.10	0.20	24	<80
Ethylene dichloride			0.60	n.d.				25	≥80
Methylene chloride	2.67	5.43	27.7	n.d.	5.90	5.60	1.20	25	<80
Formaldehyde	Not Measured by MOEE at This Site in 1992								
Perchloroethylene	0.49	0.29	1.20	n.d.	1.00	0.90	0.50	25	<80
Carbon tetrachloride	0.77	0.68	2.30	n.d.	2.10	2.10	n.d.	25	<80
Trichloroethylene	0.26	0.38	1.50	n.d.	1.00	0.90	n.d.	25	<80
Chloroform	0.30	0.22	0.80	n.d.	0.70	0.60	n.d.	25	<80
Vinyl chloride	Not Detected by MOEE at This Site in 1992							25	100

c.l. is censoring level
for c.l. ≥ 80% only the maximum and minimum concentrations are reported
for c.l. < 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics
ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XV Average Concentration of Volatile Organic Compounds: Detroit ($\mu g/m^3$).

Compound	S.W. High 1990	S.W. High 1991	Backgrd Site 1988	Salina Jr. High 1988
Methylene chloride	41.91	24.1	2.05 2.42	100% n.d.
Perchloroethylene	3.01	1.6 2.0	4.05 4.40	0.19 0.60
Trichloroethylene	0.55	0.2 0.8	0.19 0.20	0.23 0.25
Dichlorobenzene,para	2.08	1.8 2.5	2.98 3.43	0.66 1.17
Ethylene dichloride	0.13	0.0 0.8	2.02 2.15	2.53 2.63
Ethylene dibromide	****	****	****	****
Vinyl chloride	100% n.d.	100% n.d.	100% n.d.	0.04 0.53
Benzene	28.09	7.4	2.91 2.97	2.75 2.80
Butadiene,1,3	0.64	0.1 1.1	0.06 0.26	0.01 0.22
Carbon tetrachloride	1.87	1.3 1.4	100% n.d.	0.037 0.044
Chloroform	1.03	0.1 0.9	100% n.d.	0.29 0.32
Formaldehyde	****	****	3.35 3.35	4.41 4.42

Shaded cells indicate only 1 or 2 positive results. For MDNR 1991 data and the Background Site data the results are minimum (n.d. = 0.0) and maximum (n.d. = d.l.): if only one number is reported, all collected samples were above the detection limit. **** indicates the compound was not measured (or at least not reported).

TABLE XVI Summary Statistics for Volatile Organic Compounds: Walpole Island ($\mu g/m^3$).

Walpole Island (ECC&P) - 1988	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Benzene	1.35	0.82	4.01	0.57	3.92	2.23	1.06	19	<80
Butadiene,1,3	0.15	0.29	1.04	n.d.	1.03	0.88	0.04	19	<80
Ethylene dibromide	Not Measured (or not reported) by ECC&P at This Site in 1988								
Dichlorobenzene,para	Not Measured (or not reported) by ECC&P at This Site in 1988								
Ethylene dichloride	Not Measured (or not reported) by ECC&P at This Site in 1988								
Methylene chloride	Not Measured (or not reported) by ECC&P at This Site in 1988								
Formaldehyde	Not Measured by ECC&P at This Site in 1988								
Perchloroethylene	Not Measured (or not reported) by ECC&P at This Site in 1988								
Carbon tetrachloride	Not Measured (or not reported) by ECC&P at This Site in 1988								
Trichloroethylene	Not Measured (or not reported) by ECC&P at This Site in 1988								
Chloroform	Not Measured (or not reported) by ECC&P at This Site in 1988								
Vinyl chloride	Not Measured (or not reported) by ECC&P at This Site in 1988								

c.l. is censoring level
for c.l. < 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics
ECC&P: all non-detects are replaced with 0.0 before calculating statistics

Note that a full suite of chlorinated compounds was not measured at this site until 1989.

TABLE XVI (Continued) $\mu g/m^3$

Walpole Island (ECC&P) - 1989	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Benzene	1.17	0.67	2.85	0.09	2.83	2.52	0.96	19	<80
Butadiene,1,3	0.19	0.43	1.84	n.d.	1.78	0.61	n.d.	19	<80
Ethylene dibromide	0.10	0.18	0.76	n.d.	0.28	0.25	n.d.	21	<80
Dichlorobenzene,para	1.59	0.82	2.62	n.d.	2.56	2.54	1.83	21	<80
Ethylene dichloride	0.13	0.08	0.33	n.d.	0.20	0.20	0.15	21	<80
Methylene chloride	Not Measured by ECC&P at This Site in 1989								
Formaldehyde	Not Measured by ECC&P at This Site in 1989								
Perchloroethylene	0.25	0.15	0.65	n.d.	0.43	0.42	0.24	21	<80
Carbon tetrachloride	0.83	0.28	1.32	0.16	1.25	1.09	0.85	21	<80
Trichloroethylene	0.18	0.11	0.45	n.d.	0.39	0.28	0.17	21	<80
Chloroform	0.11	0.06	0.20	n.d.	0.20	0.16	0.13	21	<80
Vinyl chloride			0.17	n.d.				21	≥80

c.l. is censoring level
for c.l. ≥ 80% only the maximum and minimum concentrations are reported
for c.l. < 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics
ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XVI (Continued) $\mu g/m^3$

Walpole Island (ECC&P) - 1990	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Benzene	1.08	0.67	3.80	0.04	2.42	1.87	0.95	39	<80
Butadiene,1,3	0.02	0.06	0.32	n.d.	0.19	0.06	n.d.	39	<80
Ethylene dibromide			0.14	n.d.				40	≥80
Dichlorobenzene,para	1.25	0.78	3.53	n.d.	3.22	2.26	1.17	40	<80
Ethylene dichloride	0.08	0.10	0.47	n.d.	0.26	0.18	0.04	40	<80
Methylene chloride	1.33	0.85	3.87	0.51	3.56	2.02	1.02	32	<80
Formaldehyde	Not Measured by ECC&P at This Site in 1990								
Perchloroethylene	0.17	0.12	0.41	n.d.	0.37	0.35	0.16	40	<80
Carbon tetrachloride	0.92	0.19	1.23	0.26	1.21	1.10	0.94	40	<80
Trichloroethylene	0.17	0.12	0.46	n.d.	0.38	0.33	0.19	40	<80
Chloroform	0.15	0.26	1.32	n.d.	0.85	0.20	0.10	40	<80
Vinyl chloride	Not Detected by ECC&P at This Site in 1990							40	100

c.l. is censoring level
for c.l. ≥ 80% only the maximum and minimum concentrations are reported
for c.l. < 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics
ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XVI (Continued) $\mu g/m^3$

Walpole Island (ECC&P) - 1991	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Benzene	0.94	0.50	2,83	0.38	2.38	1.25	0.84	33	<80
Butadiene,1,3	0.02	0.05	0.19	n.d.	0.15	0.11	n.d.	33	<80
Ethylene dibromide	Not Detected by ECC&P at This Site in 1991							33	100
Dichlorobenzene,para	0.17	0.09	0.40	0.05	0.39	0.30	0.16	33	<80
Ethylene dichloride	0.01	0.04	0.22	n.d.	0.08	0.04	n.d.	33	<80
Methylene chloride	0.73	0.40	1.63	0.25	1.59	1.27	0.62	32	<80
Formaldehyde	Not Measured by ECC&P at This Site in 1991								
Perchloroethylene	0.11	0.12	0.54	n.d.	0.41	0.24	0.09	33	<80
Carbon tetrachloride	0.84	0.25	1.59	0.52	1.37	1.13	0.82	33	<80
Trichloroethylene	0.15	0.21	0.83	n.d.	0.70	0.40	0.06	33	<80
Chloroform	0.06	0.07	0.24	n.d.	0.20	0.14	0.07	33	<80
Vinyl chloride			0.22	n.d.				33	≥80

c.l. is censoring level
for c.l. ≥ 80% only the maximum and minimum concentrations are reported
for c.l. < 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics
ECC&P: all non-detects are replaced with 0.0 before calculating statistics

5.3 Chlorophenols, Chlorobenzenes & Polychlorinated Biphenyls

Chlorophenols, chlorobenzenes, and polychlorinated biphenyls were measured by ECC&P in Windsor and Walpole Island and by Roy F. Weston in Detroit at the Playground site and at the Background site. For the Environment Canada data, long-term summary statistics are also presented.

Chlorophenol results for sites 12008 and 12016 in Windsor are presented in Table XVII. Table XVIII shows chlorophenol results for two sites in Detroit and Table XIX presents the Walpole Island results.

Chlorobenzene results for sites 12008 and 12016 are presented in Table XX; for Detroit in Table XXI; and for Walpole Island in Table XXII (remember that dichlorobenzenes are measured as VOC).

Summary statistics for polychlorinated biphenyls are presented in Table XXIII (Windsor); Table XXIV (Detroit); and Table XXV (Walpole Island).

In the tables CLx (where x is an integer between 2 and 10) indicates the number of chlorine atoms. For example, CL5 in the table on the next page indicates pentachlorophenol.

TABLE XVII Chlorophenols: Windsor - ECC&P (ng/m^3)

12008		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1988	CL2	0.59	0.66	2.39	n.d.	2.39	1.92	0.77	0.39	17	11.8
	CL3	0.12	0.12	0.42	n.d.	0.42	0.27	0.16	0.11	17	23.5
	CL4	0.21	0.25	0.82	n.d.	0.82	0.65	0.30	0.10	17	35.3
	CL5	0.82	0.96	3.19	n.d.	3.19	2.66	1.23	0.75	17	23.5
	Total	1.73	1.72	4.67	n.d.	4.67	4.59	2.90	1.31	17	11.8
1989	CL2	0.84	0.70	2.12	n.d.	2.11	1.74	1.51	0.76	23	4.4
	CL3	0.23	0.19	0.71	0.02	0.58	0.51	0.36	0.18	23	0.0
	CL4	0.27	0.27	0.89	n.d.	0.77	0.75	0.44	0.14	23	4.4
	CL5	1.05	1.00	3.27	0.07	3.25	2.96	1.53	0.74	23	0.0
	Total	2.38	1.95	6.62	0.37	6.11	5.79	3.52	1.81	23	0.0
1990	CL2	0.83	0.33	1.38	0.05	1.38	1.10	0.98	0.85	12	0.0
	CL3	0.20	0.12	0.43	n.d.	0.43	0.31	0.27	0.19	12	8.3
	CL4	0.27	0.24	0.69	n.d.	0.69	0.61	0.46	0.21	12	16.7
	CL5	0.78	0.65	2.19	0.11	2.19	1.59	1.20	0.40	12	0.0
	Total	2.07	1.02	3.88	0.31	3.88	3.25	2.85	1.96	12	0.0
Aug	CL2	0.71	0.58	2.39	n.d.	1.92	1.53	0.95	0.54	65	4.6
87	CL3	0.18	0.15	0.71	n.d.	0.48	0.37	0.27	0.15	65	10.8
to	CL4	0.25	0.25	0.89	n.d.	0.75	0.65	0.35	0.18	65	15.4
Mar	CL5	0.85	0.85	3.27	n.d.	2.96	1.79	1.25	0.51	65	7.7
92	Total	1.98	1.59	6.62	n.d.	5.13	4.51	2.90	1.64	65	3.1

c.l. is censoring level
for c.l. < 80% all non-detects are replaced with 0.0 before calculating statistics

1991 data are not summarized due to a very small number of samples collected.

TABLE XVII (Continued) Chlorophenols: Windsor - ECC&P (ng/m^3).

12016		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
Jul	CL2	0.66	0.98	3.71	n.d.	3.71	1.11	0.74	0.33	12	8.3
90	CL3	0.13	0.09	0.28	n.d.	0.28	0.24	0.20	0.12	12	16.7
to	CL4	0.67	0.58	1.85	n.d.	1.85	1.53	1.13	0.51	12	8.3
Mar	CL5	2.92	2.91	9.81	0.11	9.81	7.14	3.90	2.61	12	0.0
92	Total	4.39	3.91	12.2	0.28	12.2	10.3	7.25	3.70	12	0.0

c.l. is censoring level
for c.l. < 80% all non-detects are replaced with 0.0 before calculating statistics

TABLE XVIII Chlorophenols: Detroit - Roy F. Weston (ng/m^3).

Playground Site

		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1989	CL2	0.211	0.127	0.485	0.025	0.460	0.438	0.289	0.194	38	<80
	CL3	0.164	0.097	0.427	0.014	0.398	0.289	0.224	0.140	38	<80
	CL4	0.133	0.102	0.490	n.d.	0.323	0.259	0.186	0.117	38	<80
	CL5	0.636	0.580	2.557	0.091	2.129	1.590	0.840	0.441	38	<80
1990	CL2	0.135	0.170	0.812	n.d.	0.465	0.235	0.172	0.088	26	<80
	CL3	0.123	0.148	0.663	n.d.	0.479	0.283	0.129	0.091	26	<80
	CL4	0.092	0.094	0.418	n.d.	0.251	0.249	0.108	0.065	26	<80
	CL5	0.480	0.435	1.594	n.d.	1.131	1.116	0.806	0.475	26	<80

Background Site

		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1989	CL2	0.190	0.093	0.432	0.059	0.417	0.306	0.232	0.168	31	<80
	CL3	0.185	0.115	0.633	0.056	0.372	0.321	0.223	0.152	31	<80
	CL4	0.158	0.152	0.721	0.018	0.503	0.309	0.186	0.114	31	<80
	CL5	1.109	1.396	6.199	0.077	5.035	2.416	1.308	0.629	31	<80
1990	CL2	0.125	0.113	0.430	n.d.	0.332	0.297	0.189	0.081	27	<80
	CL3	0.088	0.071	0.289	n.d.	0.227	0.176	0.129	0.064	27	<80
	CL4	0.085	0.092	0.333	n.d.	0.284	0.231	0.123	0.051	27	<80
	CL5	0.642	0.649	1.870	n.d.	1.866	1.849	0.997	0.378	27	<80

c.l. is censoring level
for c.l. <80% all non-detects are replaced with half the d.l. before calculating statistics

TABLE XIX Chlorophenols: Walpole Island - ECC&P (ng/m^3)

		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1988	CL2	0.69	0.69	2.27	n.d.	1.94	1.41	1.27	0.28	21	9.5
	CL3	0.04	0.06	0.18	n.d.	0.14	0.14	0.07	n.d.	21	57.1
	CL4	0.11	0.12	0.36	n.d.	0.32	0.30	0.18	0.10	21	38.1
	CL5	0.46	0.51	1.66	n.d.	1.44	0.97	0.78	0.18	21	28.6
	Total	1.30	1.10	3.23	0.08	3.22	2.71	2.35	1.17	21	0.0
1989	CL2	1.06	1.51	5.94	n.d.	5.94	4.02	1.18	0.59	18	5.6
	CL3	0.07	0.05	0.22	n.d.	0.22	0.14	0.07	0.06	18	11.1
	CL4	0.07	0.10	0.27	n.d.	0.27	0.27	0.13	0.02	18	50.0
	CL5	0.29	0.28	0.85	n.d.	0.85	0.84	0.47	0.17	18	5.6
	Total	1.49	1.71	6.58	0.12	6.58	4.91	1.80	0.91	18	0.0
Jan	CL2	0.78	1.04	5.94	n.d.	2.27	1.41	1.18	0.45	52	5.8
88	CL3	0.05	0.05	0.22	n.d.	0.14	0.13	0.07	0.04	52	40.4
to	CL4	0.10	0.11	0.49	n.d.	0.32	0.27	0.18	0.05	52	35.5
Jan	CL5	0.35	0.39	1.66	n.d.	1.07	0.94	0.56	0.17	52	13.5
92	Total	1.28	1.30	6.58	0.08	3.23	2.93	1.96	0.84	52	0.0

c.l. is censoring level
for c.l. < 80% all non-detects are replaced with 0.0 before calculating statistics

TABLE XX Chlorobenzenes: Windsor - ECC&P (ng/m^3)

12008		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1988	CL3	2.58	2.16	7.66	n.d.	7.53	6.44	3.14	1.68	23	4.4
	CL4	0.32	0.50	2.56	0.06	0.60	0.47	0.27	0.19	23	0.0
	CL5	0.12	0.10	0.50	n.d.	0.20	0.19	0.17	0.08	23	4.4
	CL6	0.15	0.07	0.36	n.d.	0.27	0.25	0.20	0.13	23	4.4
	Total	3.17	2.56	9.72	0.54	8.47	8.31	3.91	2.19	23	0.0
1989	CL3	2.37	2.85	15.3	0.19	5.75	4.45	2.32	1.86	27	0.0
	CL4	0.21	0.09	0.44	0.06	0.38	0.30	0.26	0.20	27	0.0
	CL5	0.12	0.06	0.28	0.03	0.24	0.21	0.15	0.10	27	0.0
	CL6	0.14	0.09	0.44	n.d.	0.25	0.25	0.17	0.12	27	7.4
	Total	2.83	2.88	15.7	0.5	6.28	5.35	2.86	2.22	27	0.0
1990	CL3	1.25	0.59	2.59	0.05	2.26	1.94	1.70	1.18	26	0.0
	CL4	0.15	0.12	0.61	n.d.	0.26	0.25	0.20	0.12	26	3.9
	CL5	0.08	0.06	0.28	n.d.	0.17	0.13	0.10	0.07	26	11.5
	CL6	0.09	0.05	0.18	n.d.	0.15	0.14	0.13	0.09	26	11.5
	Total	1.57	0.69	3.07	0.07	2.98	2.26	2.08	1.39	26	0.0
1991	CL3	0.71	0.48	1.76	n.d.	1.76	1.24	0.98	0.81	18	11.1
	CL4	0.10	0.06	0.22	n.d.	0.22	0.17	0.13	0.09	18	5.6
	CL5	0.05	0.04	0.12	n.d.	0.12	0.11	0.09	0.04	18	5.6
	CL6	0.08	0.06	0.30	0.02	0.30	0.15	0.09	0.07	18	0.0
	Total	0.94	0.58	2.16	0.12	2.16	1.59	1.31	1.06	18	0.0
Aug	CL3	1.81	1.98	15.3	n.d.	4.68	3.35	2.02	1.42	103	3.9
87	CL4	0.20	0.26	2.56	n.d.	0.38	0.30	0.23	0.16	103	1.9
to	CL5	0.09	0.07	0.50	n.d.	0.20	0.17	0.12	0.08	103	4.9
Mar	CL6	0.12	0.07	0.44	n.d.	0.25	0.20	0.15	0.10	103	5.8
92	Total	2.22	2.15	15.7	0.07	5.35	3.94	2.61	1.66	103	0.0

c.l. is censoring level
for c.l. < 80% all non-detects are replaced with 0.0 before calculating statistics

TABLE XX (Continued) Chlorobenzenes: Windsor - ECC&P (ng/m^3).

12016		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1990	CL3	0.99	0.56	2.05	0.35	2.05	1.74	1.50	0.83	14	0.0
	CL4	0.15	0.14	0.62	0.05	0.62	0.21	0.12	0.10	14	0.0
	CL5	0.07	0.03	0.13	0.04	0.13	0.11	0.09	0.06	14	0.0
	CL6	0.10	0.03	0.17	0.07	0.17	0.14	0.13	0.09	14	0.0
	Total	1.31	0.55	2.27	0.55	2.27	2.15	1.71	1.22	14	0.0
1991	CL3	0.71	0.65	2.23	n.d.	2.23	1.40	1.15	0.71	16	25.0
	CL4	0.11	0.05	0.23	0.04	0.23	0.20	0.13	0.10	16	0.0
	CL5	0.07	0.04	0.13	n.d.	0.13	0.12	0.09	0.07	16	6.3
	CL6	0.11	0.10	0.46	0.04	0.46	0.13	0.10	0.09	16	0.0
	Total	0.99	0.68	2.57	0.16	2.57	1.63	1.48	0.98	16	0.0
Jul	CL3	0.88	0.60	2.23	n.d.	2.05	1.54	1.33	0.77	34	11.8
90	CL4	0.13	0.10	0.62	0.04	0.23	0.20	0.13	0.10	34	0.0
to	CL5	0.07	0.03	0.13	n.d.	0.13	0.11	0.09	0.06	34	2.9
Mar	CL6	0.10	0.07	0.46	0.03	0.17	0.13	0.11	0.09	34	0.0
92	Total	1.17	0.61	2.57	0.16	2.27	1.75	1.63	1.19	34	0.0

c.l. is censoring level
for c.l. $<$ 80% all non-detects are replaced with 0.0 before calculating statistics

TABLE XXI Chlorobenzenes: Detroit - Roy F. Weston (ng/m^3)

Playground Site

		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1989	CL3*	0.195	0.137	0.604	0.023	0.520	0.425	0.230	0.163	39	<80
	CL4	0.034	0.023	0.138	0.006	0.086	0.058	0.040	0.031	39	<80
	CL5	0.026	0.019	0.114	0.005	0.056	0.044	0.032	0.020	39	<80
	CL6	0.050	0.027	0.131	0.010	0.103	0.089	0.069	0.045	39	<80
1990	CL3	0.166	0.195	0.781	0.025	0.688	0.581	0.172	0.083	27	<80
	CL4	0.024	0.021	0.065	n.d.	0.061	0.059	0.038	0.017	27	<80
	CL5	0.015	0.012	0.044	n.d.	0.036	0.034	0.024	0.017	27	<80
	CL6	0.031	0.017	0.069	n.d.	0.058	0.058	0.044	0.032	27	<80

Background Site

		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1989	CL3	0.144	0.096	0.543	0.036	0.333	0.197	0.170	0.126	32	<80
	CL4	0.030	0.024	0.107	0.001	0.102	0.051	0.035	0.024	32	<80
	CL5	0.018	0.014	0.057	n.d.	0.053	0.039	0.022	0.013	32	<80
	CL6	0.043	0.022	0.101	0.014	0.090	0.070	0.050	0.043	32	<80
1990	CL3	0.139	0.165	0.891	n.d.	0.318	0.282	0.142	0.097	27	<80
	CL4	0.022	0.016	0.051	n.d.	0.048	0.047	0.032	0.019	27	<80
	CL5	0.011	0.008	0.025	n.d.	0.025	0.024	0.017	0.009	27	<80
	CL6	0.028	0.016	0.059	n.d.	0.051	0.050	0.046	0.020	27	<80

c.l. is censoring level

for c.l. <80% all non-detects are replaced with half the d.l. before calculating statistics

TABLE XXII Chlorobenzenes: Walpole Island - ECC&P (ng/m^3)

		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1988	CL3	1.41	1.46	6.38	n.d.	3.90	2.65	1.89	1.03	23	4.3
	CL4	0.15	0.10	0.42	n.d.	0.31	0.27	0.22	0.15	23	8.7
	CL5	0.07	0.06	0.22	n.d.	0.18	0.18	0.08	0.06	23	13.0
	CL6	0.15	0.08	0.34	n.d.	0.29	0.26	0.21	0.14	23	4.3
	Total	1.78	1.57	6.72	n.d.	4.35	3.44	2.37	1.44	23	4.3
1989	CL3	1.38	1.62	7.11	n.d.	4.95	2.03	1.40	1.01	22	4.5
	CL4	0.14	0.08	0.31	n.d.	0.28	0.23	0.21	0.14	22	9.1
	CL5	0.07	0.03	0.13	n.d.	0.11	0.10	0.09	0.07	22	4.5
	CL6	0.14	0.06	0.27	0.02	0.23	0.20	0.18	0.13	22	0.0
	Total	1.74	1.65	7.61	0.08	5.22	2.49	1.79	1.36	22	0.0
1990	CL3	0.70	0.49	1.66	n.d.	1.61	1.51	1.01	0.58	20	5.0
	CL4	0.12	0.06	0.24	n.d.	0.23	0.21	0.16	0.11	20	5.0
	CL5	0.03	0.03	0.07	n.d.	0.07	0.06	0.06	0.04	20	30.0
	CL6	0.10	0.06	0.24	n.d.	0.21	0.16	0.13	0.10	20	15.0
	Total	0.94	0.55	1.97	0.03	1.94	1.84	1.25	0.85	20	0.0
1991	CL3	0.46	0.30	0.98	n.d.	0.98	0.90	0.64	0.47	18	11.1
	CL4	0.06	0.03	0.15	n.d.	0.15	0.09	0.08	0.07	18	5.6
	CL5	0.03	0.02	0.08	n.d.	0.08	0.07	0.04	0.02	18	11.1
	CL6	0.06	0.03	0.13	n.d.	0.13	0.12	0.09	0.06	18	5.6
	Total	0.62	0.35	1.27	0.06	1.27	1.14	0.72	0.61	18	0.0
Jan	CL3	1.02	1.21	7.11	n.d.	2.65	1.89	1.35	0.65	85	5.9
88	CL4	0.12	0.8	0.42	n.d.	0.27	0.23	0.17	0.10	85	7.1
to	CL5	0.05	0.04	0.22	n.d.	0.12	0.10	0.07	0.05	85	14.1
Jan	CL6	0.11	0.07	0.34	n.d.	0.24	0.21	0.15	0.11	85	5.9
92	Total	1.31	1.29	7.61	n.d.	3.44	2.37	1.67	0.93	85	1.2

c.l. is censoring level
for c.l. < 80% all non-detects are replaced with 0.0 before calculating statistics

TABLE XXIII Polychlorinated Biphenyls: Windsor - ECC&P (ng/m^3)

12008		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1988	CL2	0.04	0.08	0.36	n.d.	0.10	0.07	0.05	0.00	23	56.5
	CL3	0.20	0.19	0.63	n.d.	0.63	0.44	0.27	0.16	23	17.4
	CL4	0.32	0.51	2.05	n.d.	1.32	0.96	0.33	0.09	23	13.0
	CL5	0.13	0.14	0.49	n.d.	0.39	0.39	0.19	0.06	23	21.7
	CL6	0.05	0.07	0.24	n.d.	0.18	0.17	0.07	0.00	23	52.2
	CL7			0.10	n.d.					23	87.0
	CL8	Not Detected by ECC&P at This Site in 1988								23	100
	CL9			0.03	n.d.					23	95.7
	CL10	Not Detected by ECC&P at This Site in 1988								23	100
	Total	0.74	0.81	3.30	n.d.	2.17	1.75	1.07	0.46	23	4.4
1989	CL2	0.08	0.14	0.56	n.d.	0.36	0.28	0.15	0.00	27	59.3
	CL3	0.24	0.52	2.22	n.d.	1.58	0.90	0.19	0.05	27	44.4
	CL4	0.02	0.05	0.20	n.d.	0.13	0.11	0.00	0.00	27	77.8
	CL5			0.12	n.d.					27	81.5
	CL6			0.06	n.d.					27	92.6
	CL7			0.04	n.d.					27	92.6
	CL8	Not Detected by ECC&P at This Site in 1989								27	100
	CL9	Not Detected by ECC&P at This Site in 1989								27	100
	CL10	Not Detected by ECC&P at This Site in 1989								27	100
	Total	0.36	0.58	2.22	n.d.	2.14	0.90	0.38	0.20	27	29.6

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% all non-detects are replaced with 0.0 before calculating statistics

TABLE XXIII (Continued) Polychlorinated Biphenyls: Windsor - ECC&P (ng/m^3)

12008		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1990	CL2			0.28	n.d.					26	80.8
	CL3			0.14	n.d.					26	80.8
	CL4	0.05	0.07	0.22	n.d.	0.20	0.15	0.10	n.d.	26	57.7
	CL5	0.02	0.03	0.12	n.d.	0.09	0.08	0.04	0.01	26	46.1
	CL6	0.01	0.01	0.05	n.d.	0.04	0.03	0.01	n.d.	26	69.2
	CL7			0.15	n.d.					26	80.8
	CL8			0.03	n.d.					26	92.3
	CL9	Not Detected by ECC&P at This Site in 1990								26	100
	CL10	Not Detected by ECC&P at This Site in 1990								26	100
	Total	0.12	0.13	0.53	n.d.	0.35	0.27	0.19	0.07	26	23.1
1991	CL2	0.02	0.03	0.09	n.d.	0.09	0.08	0.03	0.02	18	33.3
	CL3	0.05	0.11	0.34	n.d.	0.34	0.26	n.d.	n.d.	18	77.8
	CL4	0.16	0.19	0.48	n.d.	0.48	0.48	0.35	0.09	18	44.4
	CL5	0.10	0.19	0.79	n.d.	0.79	0.32	0.10	0.03	18	27.8
	CL6	0.05	0.09	0.41	n.d.	0.41	0.12	0.05	0.02	18	33.3
	CL7	0.02	0.06	0.25	n.d.	0.25	0.02	n.d.	n.d.	18	77.8
	CL8			0.02	n.d.					18	94.4
	CL9	Not Detected by ECC&P at This Site in 1991								18	100
	CL10	Not Detected by ECC&P at This Site in 1991								18	100
	Total	0.41	0.43	1.50	n.d.	1.50	1.01	0.73	0.20	18	11.1

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% all non-detects are replaced with 0.0 before calculating statistics

TABLE XXIII (Continued) Polychlorinated Biphenyls: Windsor - ECC&P (ng/m^3)

12008		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
Aug	CL2	0.05	0.09	0.56	n.d.	0.28	0.15	0.05	n.d.	103	57.3
87	CL3	0.14	0.31	2.22	n.d.	0.63	0.37	0.16	0.01	103	49.5
to	CL4	0.14	0.29	2.05	n.d.	0.53	0.38	0.15	0.02	103	46.6
Mar	CL5	0.06	0.12	0.79	n.d.	0.29	0.19	0.08	0.01	103	43.7
92	CL6	0.02	0.06	0.41	n.d.	0.12	0.07	0.03	n.d.	103	63.1
	CL7			0.25	n.d.					103	85.4
	CL8			0.03	n.d.					103	97.1
	CL9			0.03	n.d.					103	99.0
	CL10	Not Detected by ECC&P at This Site								103	100
	Total	0.43	0.60	3.30	n.d.	1.75	1.07	0.61	0.20	103	15.5

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% all non-detects are replaced with 0.0 before calculating statistics

TABLE XXIII (Continued) Polychlorinated Biphenyls: Windsor - ECC&P (ng/m^3)

12016		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1990	CL2	0.01	0.03	0.09	n.d.	0.09	0.05	n.d.	n.d.	14	78.6
	CL3	0.04	0.07	0.18	n.d.	0.18	0.16	0.07	n.d.	14	71.4
	CL4	0.12	0.13	0.36	n.d.	0.36	0.33	0.14	0.07	14	21.4
	CL5	0.03	0.05	0.15	n.d.	0.15	0.12	0.06	0.02	14	35.7
	CL6	0.01	0.02	0.07	n.d.	0.07	0.03	0.01	n.d.	14	57.1
	CL7			0.01	n.d.					14	85.7
	CL8	Not Detected by ECC&P at This Site in 1990								14	100
	CL9	Not Detected by ECC&P at This Site in 1990								14	100
	CL10	Not Detected by ECC&P at This Site in 1990								14	100
	Total	0.21	0.15	0.51	n.d.	0.51	0.41	0.32	0.19	14	14.3
1991	CL2	0.03	0.03	0.08	n.d.	0.08	0.07	0.05	0.03	16	25.0
	CL3	0.08	0.11	0.27	n.d.	0.27	0.27	0.18	n.d.	16	62.5
	CL4	0.23	0.19	0.70	n.d.	0.70	0.40	0.34	0.23	16	25.0
	CL5	0.07	0.06	0.18	n.d.	0.18	0.14	0.11	0.06	16	25.0
	CL6	0.03	0.02	0.07	n.d.	0.07	0.07	0.04	0.03	16	37.5
	CL7			0.02	n.d.					16	81.3
	CL8	Not Detected by ECC&P at This Site in 1991								16	100
	CL9			0.01	n.d.					16	93.7
	CL10	Not Detected by ECC&P at This Site in 1991								16	100
	Total	0.43	0.33	0.99	n.d.	0.99	0.89	0.76	0.43	16	12.5

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% all non-detects are replaced with 0.0 before calculating statistics

TABLE XXIII (Continued) Polychlorinated Biphenyls: Windsor - ECC&P (ng/m^3)

12016		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
Jul	CL2	0.03	0.03	0.09	n.d.	0.08	0.07	0.05	0.02	34	44.1
90	CL3	0.07	0.09	0.27	n.d.	0.27	0.21	0.15	n.d.	34	58.8
to	CL4	0.17	0.16	0.70	n.d.	0.40	0.36	0.31	0.12	34	20.6
Mar	CL5	0.05	0.05	0.18	n.d.	0.15	0.13	0.10	0.03	34	26.5
93	CL6	0.02	0.02	0.07	n.d.	0.07	0.05	0.03	0.01	34	41.2
	CL7			0.02	n.d.					34	82.3
	CL8	Not Detected by ECC&P at This Site								34	100
	CL9			0.01	n.d.					34	97.1
	CL10	Not Detected by ECC&P at This Site								34	100
	Total	0.34	0.27	0.99	n.d.	0.89	0.77	0.51	0.26	34	11.8

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% all non-detects are replaced with 0.0 before calculating statistics

TABLE XXIV Polychlorinated Biphenyls: Detroit - Weston: Playground Site (ng/m^3)

		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1988	CL1			0.024	n.d.					25	≥80
	CL2	0.103	0.165	0.691	n.d.	0.559	0.235	0.097	0.055	25	<80
	CL3	0.456	0.569	2.449	n.d.	1.691	1.010	0.497	0.346	25	<80
	CL4	0.656	0.969	4.835	n.d.	1.237	1.179	1.014	0.511	25	<80
	CL5	0.641	1.134	5.652	n.d.	1.866	1.278	0.838	0.168	25	<80
	CL6	0.254	0.395	1.695	n.d.	1.041	0.846	0.315	0.053	25	<80
	CL7	0.055	0.102	0.497	n.d.	0.188	0.124	0.058	0.018	25	<80
	CL8	0.016	0.027	0.130	n.d.	0.069	0.026	0.013	0.007	25	<80
	CL9			0.026	n.d.					25	≥80
	CL10			0.019	n.d.					25	≥80
1989	CL1			0.033	n.d.					39	≥80
	CL2	0.094	0.053	0.250	n.d.	0.186	0.172	0.131	0.093	39	<80
	CL3	0.305	0.193	0.926	n.d.	0.668	0.551	0.426	0.276	39	<80
	CL4	0.369	0.281	0.996	n.d.	0.985	0.845	0.570	0.306	39	<80
	CL5	0.198	0.163	0.639	n.d.	0.632	0.411	0.327	0.147	39	<80
	CL6	0.077	0.071	0.350	n.d.	0.213	0.182	0.105	0.049	39	<80
	CL7	0.014	0.016	0.094	n.d.	0.037	0.033	0.017	0.008	39	<80
	CL8			0.020	n.d.					39	≥80
	CL9	Not Detected by Weston at This Site in 1989								39	100
	CL10			0.006	n.d.					39	≥80

c.l. is censoring level

for c.l. ≥ 80% only the maximum and minimum concentrations are reported

for c.l. < 80% all non-detects are replaced with half the d.l. before calculating statistics

TABLE XXIV (Continued) Polychlorinated Biphenyls: Detroit - Weston: Playground Site (ng/m^3)

		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1990	CL1			0.014	n.d.					27	≥80
	CL2	0.057	0.029	0.135	n.d.	0.112	0.101	0.065	0.054	27	<80
	CL3	0.226	0.181	0.745	n.d.	0.548	0.516	0.381	0.176	27	<80
	CL4	0.328	0.369	1.475	n.d.	1.229	0.831	0.503	0.150	27	<80
	CL5	0.195	0.243	1.097	n.d.	0.529	0.498	0.274	0.058	27	<80
	CL6	0.111	0.345	1.851	n.d.	0.223	0.186	0.068	0.017	27	<80
	CL7	0.042	0.179	0.952	n.d.	0.053	0.013	0.010	0.003	27	<80
	CL8			0.185	n.d.					27	≥80
	CL9	Not Detected by Weston at This Site in 1990								27	100
	CL10	Not Detected by Weston at This Site in 1990								27	100

c.l. is censoring level

for c.l. ≥ 80% only the maximum and minimum concentrations are reported

for c.l. < 80% all non-detects are replaced with half the d.l. before calculating statistics

TABLE XXV Polychlorinated Biphenyls: Detroit - Weston: Background Site (ng/m^3)

		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1988	CL1			0.018	n.d.					24	≥80
	CL2	0.050	0.051	0.170	n.d.	0.159	0.113	0.077	0.043	24	<80
	CL3	0.166	0.165	0.572	n.d.	0.440	0.407	0.288	0.147	24	<80
	CL4	0.202	0.216	0.766	n.d.	0.564	0.485	0.369	0.155	24	<80
	CL5	0.233	0.243	0.773	n.d.	0.653	0.607	0.413	0.159	24	<80
	CL6	0.116	0.179	0.851	n.d.	0.254	0.241	0.187	0.047	24	<80
	CL7	0.043	0.135	0.667	n.d.	0.091	0.074	0.023	0.007	24	<80
	CL8			0.132	n.d.					24	≥80
	CL9			0.024	n.d.					24	≥80
	CL10			0.001	n.d.					24	≥80
1989	CL1			0.033	n.d.					32	≥80
	CL2	0.179	0.108	0.455	n.d.	0.405	0.305	0.249	0.160	32	<80
	CL3	0.287	0.166	0.744	n.d.	0.696	0.492	0.348	0.250	32	<80
	CL4	0.226	0.175	0.721	n.d.	0.696	0.413	0.275	0.177	32	<80
	CL5	0.112	0.103	0.468	n.d.	0.322	0.222	0.168	0.070	32	<80
	CL6	0.040	0.036	0.164	n.d.	0.110	0.083	0.063	0.029	32	<80
	CL7	0.008	0.009	0.040	n.d.	0.030	0.020	0.008	n.d.	32	<80
	CL8			0.006	n.d.					32	≥80
	CL9	Not Detected by Weston at This Site in 1989								32	100
	CL10	Not Detected by Weston at This Site in 1989								32	100

c.l. is censoring level

for c.l. ≥ 80% only the maximum and minimum concentrations are reported

for c.l. < 80% all non-detects are replaced with half the d.l. before calculating statistics

TABLE XXV (Continued) Polychlorinated Biphenyls: Detroit - Weston: Background Site (ng/m^3)

		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1990	CL1			0.030	n.d.					27	≥80
	CL2	0.159	0.119	0.578	n.d.	0.318	0.316	0.210	0.121	27	<80
	CL3	0.264	0.191	0.837	n.d.	0.755	0.423	0.347	0.241	27	<80
	CL4	0.157	0.154	0.679	n.d.	0.364	0.352	0.251	0.081	27	<80
	CL5	0.072	0.071	0.231	n.d.	0.217	0.206	0.111	0.053	27	<80
	CL6	0.019	0.022	0.091	n.d.	0.055	0.046	0.035	n.d.	27	<80
	CL7			0.030	n.d.					27	≥80
	CL8	Not Detected by Weston at This Site in 1990								27	100
	CL9			0.015	n.d.					27	≥80
	CL10	Not Detected by Weston at This Site in 1990								27	100

c.l. is censoring level

for c.l. ≥ 80% only the maximum and minimum concentrations are reported

for c.l. < 80% all non-detects are replaced with half the d.l. before calculating statistics

5.4 Polycyclic Aromatic Hydrocarbons

Although the MOEE determines particulate and gaseous phase PAH separately the results here have been combined to be consistent with other agencies. If a non-detect was reported on the cartridge or the filter, half of the non-detect value was used in this sum. For samples collected after March 1991, the detection limit was calculated on a sample by sample basis as it was dependant upon the volume sampled.

Normally, chrysene and triphenylene co-elute. However, during a brief period in 1991, a different GC column which separated the two was being evaluated by MOEE. During this period, any detected triphenylene was added to the chrysene value for the purpose of this report. However, non-detects were treated as zero when combining these results.

Summary statistics for PAH are reported in Table XXVI (Windsor), Table XXVII (Detroit), and Table XXVIII (Walpole Island). Not all listed PAH are measured by all agencies. A compound not measured by an agency is clearly identified in the tables.

TABLE XXVI Polycyclic Aromatic Hydrocarbons: Windsor - (ng/m^3).

Windsor 12007 (MOEE) - 1990	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	13.68	21.46	78.23	n.d.	78.23	44.97	4.57	16	6.2
Pyrene	5.72	10.45	41.57	n.d.	41.57	14.75	1.52	16	25.0
Benzo(a)Fluorene	2.77	5.34	20.80	n.d.	20.80	7.61	n.d.	16	50.0
Benzo(b)Fluorene	0.77	1.12	3.20	n.d.	3.20	2.77	n.d.	16	62.5
1-Me-Pyrene	Not a MOEE Target List Compound								
Benzo(g,h,i)Fluoranthene	Not a MOEE Target List Compound								
Benz(a)Anthracene	2.10	3.20	11.21	n.d.	11.21	7.75	0.66	16	43.8
Chrysene & Triphenylene	1.92	2.81	10.01	n.d.	10.01	5.65	0.61	16	37.5
Benzo(b)Fluoranthene	1.78	2.39	8.25	n.d.	8.25	6.26	1.12	16	43.8
Benzo(k)Fluoranthene	1.47	3.11	11.55	n.d.	11.55	6.41	n.d.	16	56.2
Benzo(e)Pyrene	2.03	3.03	9.46	n.d.	9.46	8.34	0.77	16	43.8
Benzo(a)Pyrene	1.70	2.87	10.03	n.d.	10.03	6.27	0.46	16	43.8
Perylene			3.23	n.d.				16	87.5
Indeno(1,2,3-cd)Pyrene			4.85	n.d.				16	87.5
Dibenz(ac)Anthracene	Not Detected by MOEE at This Site in 1990							16	100
Benzo(b)Chrysene	Not a MOEE Target List Compound								
Benzo(g,h,i)Perylene			5.35	n.d.				16	87.5
Anthanthrene	Not a MOEE Target List Compound								

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics

TABLE XXVI (Continued) ng/m^3

Windsor 12007 (MOEE) - 1991	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	10.76	15.22	60.90	0.21	60.90	36.76	6.33	18	0.0
Pyrene	8.29	11.52	39.27	0.18	39.27	30.73	3.09	18	0.0
Benzo(a)Fluorene	0.79	1.96	7.06	n.d.	7.06	4.61	n.d.	18	72.2
Benzo(b)Fluorene	0.89	1.57	5.46	n.d.	5.46	3.78	n.d.	18	72.2
1-Me-Pyrene	Not a MOEE Target List Compound								
Benzo(g,h,i)Fluoranthene	Not a MOEE Target List Compound								
Benz(a)Anthracene	1.40	2.81	9.62	n.d.	9.62	6.36	n.d.	18	50.0
Chrysene & Triphenylene	4.78	11.02	44.63	n.d.	44.63	17.37	0.49	18	27.8
Benzo(b)Fluoranthene	11.76	30.99	125.53	n.d.	125.53	46.96	0.67	18	38.9
Benzo(k)Fluoranthene	2.65	5.31	19.05	n.d.	19.05	11.21	n.d.	18	61.1
Benzo(e)Pyrene	3.82	7.63	29.50	n.d.	29.50	14.14	n.d.	18	55.6
Benzo(a)Pyrene	2.51	4.35	15.29	n.d.	15.29	8.55	0.13	18	44.4
Perylene	0.27	0.46	1.69	n.d.	1.69	0.94	n.d.	18	72.2
Indeno(1,2,3-cd)Pyrene	2.18	4.74	15.60	n.d.	15.60	11.57	n.d.	18	66.7
Dibenz(ac)Anthracene			3.27	n.d.				18	83.3
Benzo(b)Chrysene	Not a MOEE Target List Compound								
Benzo(g,h,i)Perylene	2.43	5.21	17.68	n.d.	17.68	12.30	n.d.	18	61.1
Anthanthrene	Not a MOEE Target List Compound								

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics

TABLE XXVI (Continued) ng/m^3

Windsor 12007 (MOEE) - 1992	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	4.61	2.44	9.07	1.67	9.07	9.07	3.76	17	0.0
Pyrene	2.82	1.86	7.30	0.70	7.30	6.50	2.25	17	0.0
Benzo(a)Fluorene	0.27	0.26	0.84	n.d.	0.84	0.76	0.22	17	29.4
Benzo(b)Fluorene			0.48	n.d.				17	82.4
1-Me-Pyrene	Not a MOEE Target List Compound								
Benzo(g,h,i)Fluoranthene	Not a MOEE Target List Compound								
Benz(a)Anthracene	0.32	0.29	0.97	n.d.	0.97	0.87	0.15	17	35.3
Chrysene & Triphenylene	1.20	0.74	2.45	n.d.	2.45	2.30	1.12	17	5.9
Benzo(b)Fluoranthene	1.23	0.93	3.25	n.d.	3.25	2.58	1.03	17	11.8
Benzo(k)Fluoranthene	0.44	0.39	1.35	n.d.	1.35	1.26	n.d.	17	52.9
Benzo(e)Pyrene	0.59	0.46	1.71	n.d.	1.71	1.47	0.46	17	35.3
Benzo(a)Pyrene	0.22	0.24	0.90	n.d.	0.90	0.53	0.14	17	29.4
Perylene	0.57	1.13	3.31	n.d.	3.31	3.02	n.d.	17	70.6
Indeno(1,2,3-cd)Pyrene	0.36	0.45	1.75	n.d.	1.75	1.22	n.d.	17	76.5
Dibenz(ac)Anthracene	0.33	0.22	0.78	n.d.	0.78	0.77	n.d.	17	52.9
Benzo(b)Chrysene	Not a MOEE Target List Compound								
Benzo(g,h,i)Perylene	0.33	0.37	1.52	n.d.	1.52	0.93	n.d.	17	76.5
Anthanthrene	Not a MOEE Target List Compound								

c.l. is censoring level
for c.l. ≥ 80% only the maximum and minimum concentrations are reported
for c.l. < 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics

TABLE XXVI (Continued) ng/m^3

Windsor 12007 (MOEE) 01/90 to 12/92	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	9.62	15.27	78.23	n.d.	44.97	16.66	4.23	51	2.0
Pyrene	5.66	9.18	41.57	n.d.	31.31	12.20	2.49	51	7.8
Benzo(a)Fluorene	1.24	3.32	20.80	n.d.	7.06	4.55	n.d.	51	51.0
Benzo(b)Fluorene	0.63	1.14	5.46	n.d.	3.20	2.46	n.d.	51	72.5
1-Me-Pyrene	Not a MOEE Target List Compound								
Benzo(g,h,i)Fluoranthene	Not a MOEE Target List Compound								
Benz(a)Anthracene	1.26	2.51	11.21	n.d.	7.75	4.06	0.18	51	43.1
Chrysene & Triphenylene	2.69	6.81	44.63	n.d.	10.01	5.65	0.72	51	23.5
Benzo(b)Fluoranthene	5.12	18.79	125.53	n.d.	24.21	3.48	0.84	51	31.4
Benzo(k)Fluoranthene	1.54	3.66	19.05	n.d.	11.34	3.36	n.d.	51	56.9
Benzo(e)Pyrene	2.18	4.95	29.50	n.d.	10.05	6.92	0.44	51	45.1
Benzo(a)Pyrene	1.50	3.14	15.29	n.d.	8.76	6.29	0.16	51	39.2
Perylene	0.42	0.86	3.31	n.d.	3.02	1.69	n.d.	51	76.5
Indeno(1,2,3-cd)Pyrene	1.04	2.98	15.60	n.d.	9.12	1.37	n.d.	51	76.5
Dibenz(ac)Anthracene	0.27	0.47	3.27	n.d.	0.78	0.43	n.d.	51	78.4
Benzo(b)Chrysene	Not a MOEE Target List Compound								
Benzo(g,h,i)Perylene	1.12	3.28	17.68	n.d.	9.72	1.14	n.d.	51	74.5
Anthanthrene	Not a MOEE Target List Compound								

c.l. is censoring level
for c.l. < 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics

TABLE XXVI (Continued) ng/m^3

Windsor 12008 (ECC&P) - 1988	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	11.19	9.29	41.32	1.94	29.72	25.24	7.3	49	0.0
Pyrene	7.07	5.77	27.60	1.06	17.93	16.59	4.68	49	0.0
Benzo(a)Fluorene	1.26	1.47	7.06	n.d.	4.11	3.25	0.75	49	2.0
Benzo(b)Fluorene	0.80	1.31	7.35	n.d.	2.85	2.69	0.31	49	8.2
1-Me-Pyrene	0.36	0.43	2.10	n.d.	1.29	0.85	0.23	49	14.3
Benzo(g,h,i)Fluoranthene	0.72	0.71	3.60	0.09	2.37	1.38	0.45	49	0.0
Benz(a)Anthracene	1.06	1.60	9.03	n.d.	3.74	2.86	0.49	49	6.1
Chrysene & Triphenylene	2.43	3.26	17.44	0.17	8.23	5.47	1.02	49	0.0
Benzo(b)&(k)Fluoranthene	3.55	3.37	16.13	0.26	9.78	8.54	2.25	49	0.0
Benzo(e)Pyrene	0.93	1.02	5.64	0.07	2.73	2.24	0.52	49	0.0
Benzo(a)Pyrene	0.82	1.16	6.30	0.07	2.47	1.70	0.42	49	0.0
Perylene	0.13	0.23	1.39	n.d.	0.38	0.30	0.07	49	24.5
Indeno(1,2,3-cd)Pyrene	1.00	1.03	5.50	0.08	2.63	2.08	0.62	49	0.0
Dibenz(ac)&(ah)Anthracene	0.05	0.12	0.50	n.d.	0.43	0.19	n.d.	49	79.6
Benzo(b)Chrysene	0.04	0.08	0.38	n.d.	0.22	0.15	n.d.	49	73.5
Benzo(g,h,i)Perylene	0.92	0.94	4.82	0.07	2.61	1.85	0.59	49	0.0
Anthanthrene	0.04	0.07	0.41	n.d.	0.12	0.11	n.d.	49	53.1

c.l. is censoring level
for c.l. < 80% ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XXVI (Continued) ng/m^3

Windsor 12008 (ECC&P) - 1989	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	12.11	15.92	103.78	1.87	29.23	19.05	7.83	48	0.0
Pyrene	7.40	9.50	63.60	1.37	17.65	13.25	4.94	48	0.0
Benzo(a)Fluorene	1.06	1.46	9.91	n.d.	2.25	1.82	0.74	48	2.1
Benzo(b)Fluorene	0.63	0.73	4.04	n.d.	2.06	1.53	0.43	48	8.3
1-Me-Pyrene	0.40	0.47	2.21	n.d.	1.44	1.10	0.26	48	12.5
Benzo(g,h,i)Fluoranthene	0.71	0.62	3.30	n.d.	1.87	1.49	0.49	48	6.3
Benz(a)Anthracene	0.42	0.59	2.47	n.d.	1.67	1.42	0.21	48	37.5
Chrysene & Triphenylene	2.02	3.37	22.63	n.d.	5.37	4.16	1.27	48	2.1
Benzo(b)&(k)Fluoranthene	1.75	1.63	6.69	n.d.	5.77	3.62	1.23	48	10.4
Benzo(e)Pyrene	0.73	0.75	4.07	n.d.	2.09	1.74	0.47	48	6.3
Benzo(a)Pyrene	0.51	0.54	3.19	n.d.	1.39	1.06	0.40	48	14.6
Perylene	0.08	0.15	0.71	n.d.	0.29	0.21	0.03	48	47.9
Indeno(1,2,3-cd)Pyrene	0.71	0.61	2.32	n.d.	2.11	1.74	0.58	48	14.6
Dibenz(ac)&(ah)Anthracene			0.93	n.d.				48	83.3
Benzo(b)Chrysene			0.33	n.d.				48	83.3
Benzo(g,h,i)Perylene	0.53	0.46	1.74	n.d.	1.43	1.13	0.43	48	14.6
Anthanthrene	0.02	0.05	0.27	n.d.	0.15	0.09	n.d.	48	79.2

c.l. is censoring level
for c.l. ≥ 80% only the maximum and minimum concentrations are reported
for c.l. < 80% ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XXVI (Continued) ng/m^3

Windsor 12008 (ECC&P) - 1990	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	7.11	5.27	26.18	2.02	18.03	15.16	5.53	56	0.0
Pyrene	5.07	3.56	16.03	1.13	13.67	10.93	3.61	56	0.0
Benzo(a)Fluorene	0.65	0.50	2.45	n.d.	1.53	1.35	0.49	56	7.1
Benzo(b)Fluorene	0.36	0.36	1.65	n.d.	1.08	0.91	0.22	56	19.6
1-Me-Pyrene	0.20	0.18	0.73	n.d.	0.60	0.41	0.16	56	25.0
Benzo(g,h,i)Fluoranthene	0.60	0.42	2.05	n.d.	1.41	1.13	0.49	56	3.6
Benz(a)Anthracene	0.47	0.55	2.78	n.d.	1.50	1.25	0.25	56	17.9
Chrysene & Triphenylene	1.35	0.88	3.35	0.26	3.12	2.80	1.01	56	0.0
Benzo(b)&(k)Fluoranthene	1.63	1.27	5.22	0.11	4.86	3.79	1.22	56	0.0
Benzo(e)Pyrene	0.58	0.40	1.48	n.d.	1.43	1.23	0.42	56	1.8
Benzo(a)Pyrene	0.41	0.38	1.61	n.d.	1.30	0.99	0.28	56	12.5
Perylene	0.07	0.09	0.41	n.d.	0.27	0.21	0.04	56	42.9
Indeno(1,2,3-cd)Pyrene	0.63	0.49	2.29	n.d.	1.71	1.32	0.46	56	1.8
Dibenz(ac)&(ah)Anthracene			0.25	n.d.				56	94.6
Benzo(b)Chrysene			0.11	n.d.				56	87.5
Benzo(g,h,i)Perylene	0.77	0.62	3.05	n.d.	2.07	1.66	0.62	56	3.6
Anthanthrene	0.04	0.06	0.23	n.d.	0.21	0.10	n.d.	56	51.8

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XXVI (Continued) ng/m^3

Windsor 12008 (ECC&P) - 1991	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	8.12	9.63	55.51	0.47	25.04	16.89	5.18	36	0.0
Pyrene	5.45	6.19	35.54	0.28	14.94	12.05	3.81	36	0.0
Benzo(a)Fluorene	0.64	0.62	3.49	n.d.	1.67	1.25	0.47	36	5.6
Benzo(b)Fluorene	0.33	0.39	2.07	n.d.	0.90	0.82	0.26	36	13.9
1-Me-Pyrene	0.21	0.17	0.81	n.d.	0.53	0.44	0.19	36	11.1
Benzo(g,h,i)Fluoranthene	0.48	0.42	2.10	n.d.	1.38	1.16	0.41	36	2.8
Benz(a)Anthracene	0.38	0.49	2.19	n.d.	1.48	1.01	0.22	36	27.8
Chrysene & Triphenylene	1.14	0.94	4.58	n.d.	2.92	2.40	0.87	36	2.8
Benzo(b)&(k)Fluoranthene	1.18	0.92	3.00	n.d.	2.93	2.75	0.85	36	2.8
Benzo(e)Pyrene	0.61	0.43	1.96	0.08	1.58	1.27	0.48	36	0.0
Benzo(a)Pyrene	0.41	0.39	1.59	n.d.	1.35	0.93	0.28	36	5.6
Perylene	0.14	0.25	1.50	n.d.	0.39	0.26	0.07	36	19.4
Indeno(1,2,3-cd)Pyrene	0.58	0.51	1.64	n.d.	1.55	1.53	0.37	36	2.8
Dibenz(ac)&(ah)Anthracene	0.10	0.31	1.52	n.d.	1.18	0.16	n.d.	36	69.4
Benzo(b)Chrysene	0.01	0.04	0.18	n.d.	0.18	0.05	n.d.	36	77.8
Benzo(g,h,i)Perylene	0.65	0.55	2.32	0.14	1.96	1.63	0.41	36	0.0
Anthanthrene	0.03	0.07	0.34	n.d.	0.20	0.07	n.d.	36	63.9

c.l. is censoring level
for c.l. < 80% ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XXVI (Continued) ng/m^3

Windsor 12008 (ECC&P) 07/87 to 08/92	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	9.46	10.20	103.78	0.47	25.24	18.80	6.40	226	0.0
Pyrene	6.14	6.25	63.6	0.28	16.03	13.02	4.37	226	0.0
Benzo(a)Fluorene	0.91	1.12	9.91	n.d.	3.17	1.79	0.58	226	3.5
Benzo(b)Fluorene	0.54	0.81	7.35	n.d.	2.07	1.16	0.28	226	10.2
1-Me-Pyrene	0.29	0.34	2.21	n.d.	0.82	0.60	0.19	226	13.7
Benzo(g,h,i)Fluoranthene	0.62	0.55	3.60	n.d.	1.63	1.27	0.44	226	2.2
Benz(a)Anthracene	0.61	1.03	9.03	n.d.	2.56	1.50	0.24	226	17.7
Chrysene & Triphenylene	1.72	2.44	22.63	n.d.	5.24	3.38	0.94	226	0.9
Benzo(b)&(k)Fluoranthene	2.05	2.31	16.13	n.d.	7.14	4.86	1.22	226	3.1
Benzo(e)Pyrene	0.71	0.73	5.64	n.d.	1.96	1.54	0.47	226	1.8
Benzo(a)Pyrene	0.52	0.71	6.30	n.d.	1.56	1.14	0.30	226	8.4
Perylene	0.10	0.18	1.50	n.d.	0.33	0.24	0.05	226	32.3
Indeno(1,2,3-cd)Pyrene	0.76	0.82	5.50	n.d.	2.29	1.71	0.48	226	4.9
Dibenz(ac)&(ah)Anthracene			1.52	n.d.				226	81.0
Benzo(b)Chrysene			0.38	n.d.				226	80.1
Benzo(g,h,i)Perylene	0.71	0.68	4.82	n.d.	1.93	1.58	0.51	226	4.9
Anthanthrene	0.03	0.06	0.41	n.d.	0.15	0.09	n.d.	226	59.7

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XXVI (Continued) ng/m^3

Windsor 12008 (MOEE) - 1991	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	4.19	1.84	9.34	0.95	9.34	5.25	4.09	15	0.0
Pyrene	3.46	3.97	16.96	0.29	16.96	5.35	2.27	15	0.0
Benzo(a)Fluorene	0.08	0.08	0.35	n.d.	0.35	0.12	n.d.	15	73.3
Benzo(b)Fluorene			11.17	n.d.				15	86.7
1-Me-Pyrene	Not a MOEE Target List Compound								
Benzo(g,h,i)Fluoranthene	Not a MOEE Target List Compound								
Benz(a)Anthracene	0.22	0.24	0.74	n.d.	0.74	0.71	n.d.	15	60.0
Chrysene & Triphenylene	0.80	0.72	2.33	n.d.	2.33	1.82	0.67	15	26.7
Benzo(b)Fluoranthene	1.29	1.93	7.58	n.d.	7.58	2.49	0.52	15	40.0
Benzo(k)Fluoranthene	0.26	0.24	0.96	n.d.	0.96	0.59	n.d.	15	60.0
Benzo(e)Pyrene	0.32	0.23	0.84	n.d.	0.84	0.63	0.26	15	46.7
Benzo(a)Pyrene	0.16	0.17	0.55	n.d.	0.55	0.52	n.d.	15	60.0
Perylene	0.14	0.31	1.27	n.d.	1.27	0.14	n.d.	15	73.3
Indeno(1,2,3-cd)Pyrene	0.31	0.30	1.19	n.d.	1.19	0.60	n.d.	15	60.0
Dibenz(ac)Anthracene			0.79	n.d.				15	80.0
Benzo(b)Chrysene	Not a MOEE Target List Compound								
Benzo(g,h,i)Perylene	0.38	0.51	2.05	n.d.	2.05	0.80	n.d.	15	60.0
Anthanthrene	Not a MOEE Target List Compound								

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics

TABLE XXVI (Continued) ng/m^3

Windsor 12008 (MOEE) - 1992	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	4.77	3.18	13.06	0.34	10.29	9.70	3.65	25	0.0
Pyrene	3.15	2.02	8.26	0.15	6.81	6.18	2.72	25	0.0
Benzo(a)Fluorene	0.56	1.86	9.34	n.d.	1.73	0.74	n.d.	25	56.0
Benzo(b)Fluorene			3.61	n.d.				25	88.0
1-Me-Pyrene	Not a MOEE Target List Compound								
Benzo(g,h,i)Fluoranthene	Not a MOEE Target List Compound								
Benz(a)Anthracene	0.59	1.32	6.54	n.d.	2.07	1.23	0.18	25	40.0
Chrysene & Triphenylene	0.98	1.12	5.02	n.d.	2.82	2.70	0.67	25	20.0
Benzo(b)Fluoranthene	1.02	1.36	6.09	n.d.	4.03	2.50	0.53	25	20.0
Benzo(k)Fluoranthene	0.56	0.92	4.61	n.d.	1.66	1.14	n.d.	25	52.0
Benzo(e)Pyrene	0.97	1.73	7.98	n.d.	4.77	1.68	0.40	25	28.0
Benzo(a)Pyrene	0.19	0.31	1.29	n.d.	0.91	0.49	n.d.	25	56.0
Perylene			4.57	n.d.				25	80.0
Indeno(1,2,3-cd)Pyrene	0.28	0.22	0.93	n.d.	0.86	0.69	n.d.	25	68.0
Dibenz(ac)Anthracene	0.57	1.12	5.69	n.d.	1.21	1.18	n.d.	25	64.0
Benzo(b)Chrysene	Not a MOEE Target List Compound								
Benzo(g,h,i)Perylene	0.27	0.22	0.93	n.d.	0.87	0.60	n.d.	25	76.0
Anthanthrene	Not a MOEE Target List Compound								

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics

TABLE XXVI (Continued) ng/m^3

Windsor 12008 (MOEE) 09/90 to 12/92	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	4.59	2.76	13.06	0.34	9.70	9.34	4.09	47	0.0
Pyrene	3.21	2.75	16.96	0.15	6.81	6.18	2.42	47	0.0
Benzo(a)Fluorene	0.34	1.37	9.34	n.d.	0.74	0.35	n.d.	47	68.1
Benzo(b)Fluorene			11.17	n.d.				47	89.4
1-Me-Pyrene	Not a MOEE Target List Compound								
Benzo(g,h,i)Fluoranthene	Not a MOEE Target List Compound								
Benz(a)Anthracene	0.40	0.98	6.54	n.d.	1.23	0.74	n.d.	47	55.3
Chrysene & Triphenylene	0.79	0.95	5.02	n.d.	2.70	2.16	0.42	47	34.0
Benzo(b)Fluoranthene	1.26	2.41	13.91	n.d.	6.09	2.50	0.52	47	36.2
Benzo(k)Fluoranthene	0.72	2.27	15.20	n.d.	1.66	0.96	n.d.	47	59.6
Benzo(e)Pyrene	0.64	1.31	7.98	n.d.	1.68	1.05	0.31	47	44.7
Benzo(a)Pyrene	0.16	0.25	1.29	n.d.	0.55	0.49	n.d.	47	63.8
Perylene			4.57	n.d.				47	80.9
Indeno(1,2,3-cd)Pyrene	0.26	0.24	1.19	n.d.	0.86	0.60	n.d.	47	70.2
Dibenz(ac)Anthracene	0.39	0.84	5.69	n.d.	1.18	0.79	n.d.	47	74.5
Benzo(b)Chrysene	Not a MOEE Target List Compound								
Benzo(g,h,i)Perylene	0.28	0.33	2.05	n.d.	0.87	0.60	n.d.	47	74.5
Anthanthrene	Not a MOEE Target List Compound								

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics

TABLE XXVI (Continued) ng/m^3

Windsor 12016 (ECC&P) - 1990	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	8.93	8.68	37.98	1.86	25.16	22.93	4.98	30	0.0
Pyrene	6.34	6.03	25.24	1.40	19.65	15.39	3.59	30	0.0
Benzo(a)Fluorene	0.69	0.59	2.28	0.16	2.06	1.71	0.35	30	0.0
Benzo(b)Fluorene	0.50	0.61	2.71	n.d.	1.80	1.41	0.17	30	3.3
1-Me-Pyrene	0.25	0.23	0.83	n.d.	0.72	0.65	0.16	30	10.0
Benzo(g,h,i)Fluoranthene	0.57	0.48	2.26	n.d.	1.49	1.15	0.35	30	3.3
Benz(a)Anthracene	0.67	0.84	3.64	n.d.	2.19	1.83	0.25	30	13.3
Chrysene & Triphenylene	1.34	1.16	4.84	0.16	3.68	3.00	0.86	30	0.0
Benzo(b)&(k)Fluoranthene	1.52	1.31	5.83	0.28	3.80	3.45	0.99	30	0.0
Benzo(e)Pyrene	0.50	0.44	1.94	n.d.	1.48	0.96	0.35	30	3.3
Benzo(a)Pyrene	0.43	0.47	1.83	n.d.	1.80	0.94	0.29	30	13.3
Perylene	0.08	0.11	0.44	n.d.	0.39	0.22	0.05	30	40.0
Indeno(1,2,3-cd)Pyrene	0.59	0.55	2.30	n.d.	1.96	1.15	0.40	30	3.3
Dibenz(ac)&(ah)Anthracene			0.44	n.d.				30	86.7
Benzo(b)Chrysene			0.04	n.d.				30	93.3
Benzo(g,h,i)Perylene	0.71	0.75	3.60	n.d.	2.20	1.47	0.42	30	3.3
Anthanthrene	0.03	0.08	0.33	n.d.	0.28	0.13	n.d.	30	76.7

c.l. is censoring level
for c.l. ≥ 80% only the maximum and minimum concentrations are reported
for c.l. < 80% ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XXVI (Continued) ng/m^3

Windsor 12016 (ECC&P) - 1991	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	7.93	7.25	32.00	1.15	24.09	17.68	4.87	54	0.0
Pyrene	4.90	4.79	21.09	0.57	16.02	12.42	3.21	54	0.0
Benzo(a)Fluorene	0.63	0.65	3.24	0.07	1.76	1.46	0.43	54	0.0
Benzo(b)Fluorene	0.38	0.47	2.32	n.d.	1.17	1.05	0.21	54	5.6
1-Me-Pyrene	0.16	0.14	0.66	n.d.	0.42	0.34	0.12	54	7.4
Benzo(g,h,i)Fluoranthene	0.39	0.30	1.44	0.07	1.11	0.79	0.27	54	0.0
Benz(a)Anthracene	0.40	0.70	4.30	n.d.	1.87	0.90	0.18	54	16.7
Chrysene & Triphenylene	1.09	1.17	6.05	0.15	3.70	2.86	0.69	54	0.0
Benzo(b)&(k)Fluoranthene	1.19	1.40	6.25	n.d.	5.68	2.80	0.67	54	1.9
Benzo(e)Pyrene	0.50	0.52	2.67	n.d.	2.01	1.09	0.31	54	1.9
Benzo(a)Pyrene	0.38	0.49	2.15	n.d.	1.78	1.04	0.21	54	7.4
Perylene	0.10	0.15	0.69	n.d.	0.52	0.28	0.05	54	20.4
Indeno(1,2,3-cd)Pyrene	0.47	0.59	3.25	n.d.	1.74	0.88	0.26	54	1.9
Dibenz(ac)&(ah)Anthracene	0.04	0.10	0.48	n.d.	0.38	0.10	n.d.	54	68.5
Benzo(b)Chrysene			0.31	n.d.				54	81.5
Benzo(g,h,i)Perylene	0.56	0.58	2.59	n.d.	2.26	1.14	0.35	54	1.9
Anthanthrene	0.04	0.08	0.42	n.d.	0.25	0.09	n.d.	54	51.9

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XXVI (Continued) ng/m^3

Windsor 12016 (ECC&P) - 1992	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	6.43	5.27	21.64	0.29	16.33	14.29	4.68	27	0.0
Pyrene	3.92	2.74	10.56	0.15	8.45	7.81	3.37	27	0.0
Benzo(a)Fluorene	0.49	0.27	1.01	0.04	0.97	0.92	0.44	27	0.0
Benzo(b)Fluorene	0.22	0.13	0.48	n.d.	0.43	0.40	0.18	27	3.7
1-Me-Pyrene	0.15	0.09	0.33	n.d.	0.30	0.29	0.15	27	7.4
Benzo(g,h,i)Fluoranthene	0.35	0.23	0.88	n.d.	0.75	0.71	0.35	27	7.4
Benz(a)Anthracene	0.21	0.12	0.48	0.04	0.47	0.39	0.20	27	0.0
Chrysene & Triphenylene	0.66	0.39	1.67	0.07	1.43	1.20	0.61	27	0.0
Benzo(b)&(k)Fluoranthene	0.66	0.43	1.87	0.07	1.43	1.27	0.67	27	0.0
Benzo(e)Pyrene	0.33	0.21	0.96	0.04	0.61	0.61	0.35	27	0.0
Benzo(a)Pyrene	0.14	0.10	0.35	n.d.	0.31	0.29	0.12	27	14.8
Perylene	0.04	0.03	0.11	n.d.	0.11	0.10	0.03	27	25.9
Indeno(1,2,3-cd)Pyrene	0.29	0.23	0.81	0.02	0.80	0.60	0.19	27	0.0
Dibenz(ac)&(ah)Anthracene	0.01	0.03	0.10	n.d.	0.05	0.05	n.d.	27	74.1
Benzo(b)Chrysene			0.07	n.d.				27	92.6
Benzo(g,h,i)Perylene	0.36	0.29	1.11	0.03	0.92	0.87	0.27	27	0.0
Anthanthrene	0.01	0.02	0.06	n.d.	0.05	0.04	n.d.	27	51.9

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XXVI (Continued) ng/m^3

Windsor 12016 (ECC&P) 07/90 to 09/92	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	7.84	7.25	37.98	0.29	24.09	17.68	4.86	111	0.0
Pyrene	5.05	4.82	25.24	0.15	16.02	12.08	3.22	111	0.0
Benzo(a)Fluorene	0.61	0.56	3.24	0.04	1.76	1.37	0.43	111	0.0
Benzo(b)Fluorene	0.37	0.47	2.71	n.d.	1.36	0.83	0.20	111	4.5
1-Me-Pyrene	0.18	0.16	0.83	n.d.	0.59	0.36	0.14	111	8.1
Benzo(g,h,i)Fluoranthene	0.43	0.35	2.26	n.d.	1.11	0.88	0.33	111	2.7
Benz(a)Anthracene	0.43	0.67	4.30	n.d.	1.87	1.04	0.19	111	11.7
Chrysene & Triphenylene	1.05	1.05	6.05	0.07	3.55	2.37	0.69	111	0.0
Benzo(b)&(k)Fluoranthene	1.15	1.24	6.25	n.d.	3.80	2.51	0.77	111	0.9
Benzo(e)Pyrene	0.46	0.45	2.67	n.d.	1.34	0.95	0.34	111	1.8
Benzo(a)Pyrene	0.34	0.43	2.15	n.d.	1.27	0.79	0.20	111	9.9
Perylene	0.08	0.13	0.69	n.d.	0.37	0.17	0.05	111	27.0
Indeno(1,2,3-cd)Pyrene	0.45	0.52	3.25	n.d.	1.29	0.90	0.27	111	1.8
Dibenz(ac)&(ah)Anthracene	0.03	0.09	0.48	n.d.	0.20	0.08	n.d.	111	74.8
Benzo(b)Chrysene			0.31	n.d.				111	87.4
Benzo(g,h,i)Perylene	0.55	0.59	3.60	n.d.	1.89	1.14	0.35	111	1.8
Anthanthrene	0.03	0.07	0.42	n.d.	0.16	0.09	n.d.	111	58.6

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XXVI (Continued) ng/m^3

Windsor 12056 (MOEE) - 1991	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	5.91	6.63	20.67	0.79	20.67	13.49	2.81	11	0.0
Pyrene	3.96	4.78	17.42	0.52	17.42	5.20	2.23	11	0.0
Benzo(a)Fluorene	Not Detected by MOEE at This Site in 1991							11	100
Benzo(b)Fluorene	Not Detected by MOEE at This Site in 1991							11	100
1-Me-Pyrene	Not a MOEE Target List Compound								
Benzo(g,h,i)Fluoranthene	Not a MOEE Target List Compound								
Benz(a)Anthracene			0.43	n.d.				11	81.8
Chrysene & Triphenylene	0.4	0.36	1.32	n.d.	1.32	0.76	0.28	11	36.4
Benzo(b)Fluoranthene	1.60	3.48	11.98	n.d.	11.98	1.91	0.50	11	27.3
Benzo(k)Fluoranthene			0.38	n.d.				11	81.8
Benzo(e)Pyrene	0.30	0.35	1.25	n.d.	1.25	0.64	n.d.	11	72.7
Benzo(a)Pyrene	0.10	0.14	0.37	n.d.	0.37	0.36	n.d.	11	72.7
Perylene			12.41	n.d.				11	90.9
Indeno(1,2,3-cd)Pyrene			0.69	n.d.				11	90.9
Dibenz(ac)Anthracene			0.26	n.d.				11	90.9
Benzo(b)Chrysene	Not a MOEE Target List Compound								
Benzo(g,h,i)Perylene			0.39	n.d.				11	90.9
Anthanthrene	Not a MOEE Target List Compound								

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics

TABLE XXVI (Continued) ng/m^3

Windsor 12056 (MOEE) - 1992	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	4.44	1.76	8.27	2.21	7.46	7.17	3.80	22	0.0
Pyrene	2.94	1.55	7.28	0.93	4.95	4.56	2.65	22	0.0
Benzo(a)Fluorene	0.15	0.20	0.94	n.d.	0.38	0.26	n.d.	22	50.0
Benzo(b)Fluorene			181.69	n.d.				22	90.9
1-Me-Pyrene	Not a MOEE Target List Compound								
Benzo(g,h,i)Fluoranthene	Not a MOEE Target List Compound								
Benz(a)Anthracene	0.18	0.17	0.72	n.d.	0.53	0.47	n.d.	22	54.5
Chrysene & Triphenylene	0.73	0.55	1.76	n.d.	1.76	1.73	0.67	22	18.2
Benzo(b)Fluoranthene	0.68	0.52	1.80	n.d.	1.56	1.43	0.40	22	22.7
Benzo(k)Fluoranthene	0.38	0.37	1.36	n.d.	1.11	1.09	n.d.	22	54.5
Benzo(e)Pyrene	0.52	0.47	1.64	n.d.	1.48	1.31	0.33	22	31.8
Benzo(a)Pyrene	0.20	0.28	0.93	n.d.	0.78	0.62	n.d.	22	50.0
Perylene			0.10	n.d.				22	90.9
Indeno(1,2,3-cd)Pyrene	0.43	0.47	1.71	n.d.	1.27	1.24	n.d.	22	63.6
Dibenz(ac)Anthracene	0.22	0.10	0.56	n.d.	0.40	0.34	n.d.	22	77.3
Benzo(b)Chrysene	Not a MOEE Target List Compound								
Benzo(g,h,i)Perylene	0.43	0.52	2.04	n.d.	1.45	1.04	n.d.	22	68.2
Anthanthrene	Not a MOEE Target List Compound								

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for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics

TABLE XXVI (Continued) ng/m^3

Windsor 12056 (MOEE) 07/91 to 12/92	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	4.93	4.03	20.67	0.79	13.49	8.27	3.53	33	0.0
Pyrene	3.28	2.99	17.42	0.52	7.28	5.00	2.53	33	0.0
Benzo(a)Fluorene	0.11	0.17	0.94	n.d.	0.38	0.25	n.d.	33	66.7
Benzo(b)Fluorene			181.69	n.d.				33	93.9
1-Me-Pyrene	Not a MOEE Target List Compound								
Benzo(g,h,i)Fluoranthene	Not a MOEE Target List Compound								
Benz(a)Anthracene	0.16	0.16	0.72	n.d.	0.53	0.43	n.d.	33	63.6
Chrysene & Triphenylene	0.63	0.51	1.76	n.d.	1.76	1.61	0.52	33	24.2
Benzo(b)Fluoranthene	0.99	2.04	11.98	n.d.	1.91	1.56	0.43	33	24.2
Benzo(k)Fluoranthene	0.32	0.32	1.36	n.d.	1.11	0.92	n.d.	33	63.6
Benzo(e)Pyrene	0.44	0.44	1.64	n.d.	1.48	1.25	0.27	33	45.5
Benzo(a)Pyrene	0.17	0.24	0.93	n.d.	0.78	0.58	n.d.	33	57.6
Perylene			12.41	n.d.				33	90.9
Indeno(1,2,3-cd)Pyrene	0.35	0.41	1.71	n.d.	1.27	1.15	n.d.	33	72.7
Dibenz(ac)Anthracene			0.56	n.d.				33	81.8
Benzo(b)Chrysene	Not a MOEE Target List Compound								
Benzo(g,h,i)Perylene	0.35	0.44	2.04	n.d.	1.45	1.04	n.d.	33	75.8
Anthanthrene	Not a MOEE Target List Compound								

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for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics

TABLE XXVI (Continued) ng/m^3

Windsor 12057 (MOEE) - 1991	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	4.61	3.55	11.73	1.15	11.73	11.73	3.70	8	0.0
Pyrene	3.01	1.52	5.47	0.84	5.47	5.47	3.24	8	0.0
Benzo(a)Fluorene	0.16	0.19	0.48	n.d.	0.48	0.48	n.d.	8	62.5
Benzo(b)Fluorene			10.62	n.d.				8	87.5
1-Me-Pyrene	Not a MOEE Target List Compound								
Benzo(g,h,i)Fluoranthene	Not a MOEE Target List Compound								
Benz(a)Anthracene	0.15	0.14	0.47	n.d.	0.47	0.47	n.d.	8	75.0
Chrysene & Triphenylene	0.31	0.24	0.74	n.d.	0.74	0.74	n.d.	8	62.5
Benzo(b)Fluoranthene	1.75	2.99	9.02	n.d.	9.02	9.02	0.87	8	37.5
Benzo(k)Fluoranthene	0.26	0.17	0.59	n.d.	0.59	0.59	n.d.	8	62.5
Benzo(e)Pyrene	0.39	0.32	1.07	n.d.	1.07	1.07	n.d.	8	50.0
Benzo(a)Pyrene	0.11	0.12	0.34	n.d.	0.34	0.34	n.d.	8	62.5
Perylene	1.35	3.16	9.06	n.d.	9.06	9.06	n.d.	8	75.0
Indeno(1,2,3-cd)Pyrene			0.44	n.d.				8	87.5
Dibenz(ac)Anthracene	0.25	0.17	0.59	n.d.	0.59	0.59	n.d.	8	75.0
Benzo(b)Chrysene	Not a MOEE Target List Compound								
Benzo(g,h,i)Perylene	0.22	0.11	0.39	n.d.	0.39	0.39	n.d.	8	75.0
Anthanthrene	Not a MOEE Target List Compound								

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics

TABLE XXVI (Continued) ng/m^3

Windsor 12057 (MOEE) - 1992	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	4.08	1.81	7.22	0.33	7.21	7.04	3.90	19	0.0
Pyrene	2.94	1.59	6.11	0.31	6.08	5.50	2.74	19	0.0
Benzo(a)Fluorene	0.22	0.20	0.81	n.d.	0.79	0.47	0.18	19	31.6
Benzo(b)Fluorene			0.59	n.d.				19	84.2
1-Me-Pyrene	Not a MOEE Target List Compound								
Benzo(g,h,i)Fluoranthene	Not a MOEE Target List Compound								
Benz(a)Anthracene	0.66	1.40	6.23	n.d.	5.99	1.51	0.20	19	36.8
Chrysene & Triphenylene	1.00	0.59	2.26	0.23	2.25	2.12	0.92	19	0.0
Benzo(b)Fluoranthene	0.99	0.65	2.44	n.d.	2.43	2.17	0.79	19	5.3
Benzo(k)Fluoranthene	0.49	0.44	1.76	n.d.	1.74	1.27	0.37	19	42.1
Benzo(e)Pyrene	0.60	0.58	2.32	n.d.	2.29	1.75	0.39	19	26.3
Benzo(a)Pyrene	0.23	0.28	1.11	n.d.	1.08	0.59	0.13	19	36.8
Perylene			4.67	n.d.				19	84.2
Indeno(1,2,3-cd)Pyrene	0.53	0.62	2.34	n.d.	2.30	1.50	n.d.	19	52.6
Dibenz(ac)Anthracene	0.28	0.19	0.85	n.d.	0.84	0.60	n.d.	19	63.2
Benzo(b)Chrysene	Not a MOEE Target List Compound								
Benzo(g,h,i)Perylene	0.52	0.63	2.36	n.d.	2.33	1.73	n.d.	19	57.9
Anthanthrene	Not a MOEE Target List Compound								

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics

TABLE XXVI (Continued) ng/m^3

Windsor 12057 (MOEE) 07/91 to 12/92	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	4.24	2.39	11.73	0.33	7.68	7.20	3.90	27	0.0
Pyrene	2.96	1.54	6.11	0.31	5.50	5.44	2.74	27	0.0
Benzo(a)Fluorene	0.20	0.20	0.81	n.d.	0.48	0.46	0.14	27	40.7
Benzo(b)Fluorene			10.62	n.d.				27	85.2
1-Me-Pyrene	Not a MOEE Target List Compound								
Benzo(g,h,i)Fluoranthene	Not a MOEE Target List Compound								
Benz(a)Anthracene	0.51	1.19	6.23	n.d.	1.51	0.83	0.14	27	48.1
Chrysene & Triphenylene	0.79	0.60	2.26	n.d.	2.12	1.77	0.65	27	18.5
Benzo(b)Fluoranthene	1.22	1.68	9.02	n.d.	2.44	2.13	0.79	27	14.8
Benzo(k)Fluoranthene	0.42	0.39	1.76	n.d.	1.27	0.95	0.35	27	48.1
Benzo(e)Pyrene	0.54	0.52	2.32	n.d.	1.75	1.09	0.39	27	33.3
Benzo(a)Pyrene	0.20	0.25	1.11	n.d.	0.59	0.51	0.10	27	44.4
Perylene			9.06	n.d.				27	81.5
Indeno(1,2,3-cd)Pyrene	0.43	0.54	2.34	n.d.	1.50	1.34	n.d.	27	63.0
Dibenz(ac)Anthracene	0.27	0.18	0.85	n.d.	0.60	0.58	n.d.	27	66.7
Benzo(b)Chrysene	Not a MOEE Target List Compound								
Benzo(g,h,i)Perylene	0.43	0.55	2.36	n.d.	1.73	1.16	n.d.	27	63.0
Anthanthrene	Not a MOEE Target List Compound								

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% MOEE: all non-detects are replaced with half the detection limit before calculating statistics

TABLE XXVII Polycyclic Aromatic Hydrocarbons: Detroit - (ng/m^3).

Detroit Playground (Weston) - 1988	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	12.05	6.07	29.05	4.36	22.73	22.07	10.33	27	0.0
Pyrene	7.99	4.50	19.23	0.13	14.59	14.39	7.67	27	0.0
Benzo(a)Fluorene	Not Measured or Not Reported by Weston at This Site in 1988								
Benzo(b)Fluorene	Not Measured or Not Reported by Weston at This Site in 1988								
1-Me-Pyrene	Not a Weston Target List Compound								
Benzo(g,h,i)Fluoranthene	Not a Weston Target List Compound								
Benz(a)Anthracene	1.37	1.63	8.72	0.07	3.32	2.24	1.04	27	0.0
Chrysene & Triphenylene	2.15	1.00	4.72	0.47	4.00	3.63	1.96	27	0.0
Benzo(b)&(k)Fluoranthene	2.01	1.13	4.80	0.23	4.36	4.20	1.74	27	0.0
Benzo(e)Pyrene	Not Measured or Not Reported by Weston at This Site in 1988								
Benzo(a)Pyrene	0.46	0.40	1.59	n.d.	1.06	0.96	0.45	27	18.5
Perylene	Not Measured or Not Reported by Weston at This Site in 1988								
Indeno(1,2,3-cd)Pyrene	0.65	0.47	1.66	n.d.	1.50	1.29	0.64	27	14.8
Dibenz(ac)&(ah)Anthracene	0.08	0.06	0.26	n.d.	0.21	0.18	0.06	27	11.1
Benzo(b)Chrysene	Not Measured or Not Reported by Weston at This Site in 1988								
Benzo(g,h,i)Perylene	1.42	0.90	3.50	n.d.	2.87	2.41	1.57	27	14.8
Anthanthrene	Not Measured or Not Reported by Weston at This Site in 1988								

c.l. is censoring level
for c.l. < 80% Weston: all non-detects are replaced with 0.0 before calculating statistics

TABLE XXVII (Continued) ng/m^3

Detroit Playground (Weston) - 1989	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	12.11	5.33	26.79	5.12	20.77	18.48	12.10	46	0.0
Pyrene	9.46	4.04	19.72	0.08	15.74	14.75	9.09	46	0.0
Benzo(a)Fluorene	1.23	0.65	3.22	0.51	2.51	2.23	1.03	46	0.0
Benzo(b)Fluorene	0.81	0.42	2.15	0.25	1.52	1.48	0.69	46	0.0
1-Me-Pyrene	Not a Weston Target List Compound								
Benzo(g,h,i)Fluoranthene	Not a Weston Target List Compound								
Benz(a)Anthracene	1.04	0.75	3.99	0.06	2.14	1.92	0.93	46	0.0
Chrysene & Triphenylene	2.04	1.14	6.14	0.61	4.10	3.56	1.77	46	0.0
Benzo(b)&(k)Fluoranthene	1.70	1.22	8.14	0.36	2.88	2.75	1.53	46	0.0
Benzo(e)Pyrene	0.89	0.58	3.68	0.15	1.48	1.38	0.78	46	0.0
Benzo(a)Pyrene	0.62	0.56	2.92	n.d.	1.78	1.28	0.43	46	2.2
Perylene	0.11	0.11	0.64	n.d.	0.24	0.21	0.09	45	4.4
Indeno(1,2,3-cd)Pyrene	0.89	0.79	4.76	n.d.	1.92	1.82	0.77	46	4.3
Dibenz(ac)&(ah)Anthracene	0.11	0.13	0.75	n.d.	0.29	0.22	0.06	45	6.7
Benzo(b)Chrysene	Not a Weston Target List Compound								
Benzo(g,h,i)Perylene	1.68	1.19	5.22	n.d.	3.89	3.22	1.44	46	4.3
Anthanthrene	0.03	0.10	0.63	n.d.	0.12	0.06	n.d.	46	69.6

c.l. is censoring level
for c.l. < 80% Weston: all non-detects are replaced with 0.0 before calculating statistics

TABLE XXVII (Continued) ng/m^3

Detroit Playground (Weston) - 1990	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	9.51	3.27	17.99	2.63	15.73	14.56	9.05	49	0.0
Pyrene	7.21	2.22	12.11	2.63	11.04	10.09	6.93	49	0.0
Benzo(a)Fluorene	0.85	0.41	2.04	0.28	1.59	1.39	0.75	49	0.0
Benzo(b)Fluorene	0.51	0.21	1.06	0.19	0.94	0.85	0.48	49	0.0
1-Me-Pyrene	Not a Weston Target List Compound								
Benzo(g,h,i)Fluoranthene	Not a Weston Target List Compound								
Benz(a)Anthracene	0.77	0.43	1.90	0.20	1.89	1.54	0.70	49	0.0
Chrysene & Triphenylene	1.45	0.57	2.99	0.42	2.53	2.38	1.34	49	0.0
Benzo(b)&(k)Fluoranthene	1.02	0.53	2.52	0.26	1.97	1.90	0.84	49	0.0
Benzo(e)Pyrene	0.58	0.31	1.56	0.16	1.12	1.06	0.50	49	0.0
Benzo(a)Pyrene	0.44	0.34	1.60	0.05	1.21	0.89	0.36	49	0.0
Perylene	0.08	0.06	0.30	n.d.	0.21	0.17	0.06	49	2.0
Indeno(1,2,3-cd)Pyrene	0.50	0.32	1.26	n.d.	1.16	1.02	0.40	49	2.0
Dibenz(ac)&(ah)Anthracene	0.05	0.04	0.14	n.d.	0.13	0.13	0.05	49	22.5
Benzo(b)Chrysene	Not a Weston Target List Compound								
Benzo(g,h,i)Perylene	1.20	0.74	3.32	n.d.	2.53	2.38	0.98	49	2.0
Anthanthrene			0.24	0.14				49	81.6

c.l. is censoring level
for c.l. < 80% Weston: all non-detects are replaced with 0.0 before calculating statistics

TABLE XXVII (Continued) ng/m^3

Detroit Background (Weston) - 1988	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	5.81	3.31	15.45	1.80	11.20	9.88	5.72	25	0.0
Pyrene	4.76	3.26	14.90	0.80	10.60	7.95	4.62	25	0.0
Benzo(a)Fluorene	Not Measured or Not Reported by Weston at This Site in 1988								
Benzo(b)Fluorene	Not Measured or Not Reported by Weston at This Site in 1988								
1-Me-Pyrene	Not a Weston Target List Compound								
Benzo(g,h,i)Fluoranthene	Not a Weston Target List Compound								
Benz(a)Anthracene	0.63	0.60	2.19	0.02	1.82	1.80	0.42	25	0.0
Chrysene & Triphenylene	1.29	0.95	3.27	0.13	3.20	2.87	0.99	25	0.0
Benzo(b)&(k)Fluoranthene	1.21	0.91	3.23	0.14	3.09	2.86	0.93	25	0.0
Benzo(e)Pyrene	Not Measured or Not Reported by Weston at This Site in 1988								
Benzo(a)Pyrene	0.37	0.39	1.34	n.d.	1.13	1.01	0.29	25	8.0
Perylene	Not Measured or Not Reported by Weston at This Site in 1988								
Indeno(1,2,3-cd)Pyrene	0.50	0.48	1.62	n.d.	1.51	1.25	0.45	25	8.0
Dibenz(ac)&(ah)Anthracene	0.05	0.06	0.29	n.d.	0.12	0.10	0.04	23	17.4
Benzo(b)Chrysene	Not a Weston Target List Compound								
Benzo(g,h,i)Perylene	1.05	1.01	3.82	n.d.	3.23	2.65	0.91	25	8.0
Anthanthrene	Not Measured or Not Reported by Weston at This Site in 1988								

c.l. is censoring level
for c.l. < 80% Weston: all non-detects are replaced with 0.0 before calculating statistics

TABLE XXVII (Continued) ng/m^3

Detroit Background (Weston) - 1989	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	6.05	3.34	17.45	1.65	12.02	9.72	5.05	44	0.0
Pyrene	4.68	3.01	15.70	n.d.	9.39	8.54	4.02	44	2.3
Benzo(a)Fluorene	0.70	0.46	2.06	n.d.	1.56	1.35	0.55	44	2.3
Benzo(b)Fluorene	0.38	0.30	1.29	n.d.	0.91	0.82	0.29	44	2.3
1-Me-Pyrene	Not a Weston Target List Compound								
Benzo(g,h,i)Fluoranthene	Not a Weston Target List Compound								
Benz(a)Anthracene	0.55	0.55	2.85	n.d.	1.26	1.20	0.37	44	2.3
Chrysene & Triphenylene	1.19	0.95	4.92	n.d.	2.76	2.62	0.85	44	2.3
Benzo(b)&(k)Fluoranthene	1.04	0.79	3.81	n.d.	2.41	2.22	0.81	44	2.3
Benzo(e)Pyrene	0.51	0.41	1.90	n.d.	1.19	1.08	0.38	43	2.3
Benzo(a)Pyrene	0.41	0.42	1.64	n.d.	1.43	1.04	0.28	44	4.5
Perylene	0.06	0.06	0.26	n.d.	0.18	0.15	0.04	43	9.3
Indeno(1,2,3-cd)Pyrene	0.50	0.48	1.90	n.d.	1.60	1.13	0.35	44	9.1
Dibenz(ac)&(ah)Anthracene	0.06	0.09	0.44	n.d.	0.26	0.15	0.03	44	25.0
Benzo(b)Chrysene	Not a Weston Target List Compound								
Benzo(g,h,i)Perylene	0.92	0.83	3.25	n.d.	3.01	2.31	0.75	44	4.5
Anthanthrene			0.32	n.d.				44	93.2

c.l. is censoring level
for c.l. ≥ 80% only the maximum and minimum concentrations are reported
for c.l. < 80% Weston: all non-detects are replaced with 0.0 before calculating statistics

TABLE XXVII (Continued) ng/m^3

Detroit Background (Weston) - 1990	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	4.96	3.24	15.53	0.74	10.43	9.67	4.37	48	0.0
Pyrene	3.53	2.27	10.11	0.50	8.97	6.61	3.31	48	0.0
Benzo(a)Fluorene	0.45	0.40	2.17	0.03	1.19	1.09	0.37	48	0.0
Benzo(b)Fluorene	0.26	0.25	1.45	n.d.	0.75	0.60	0.19	48	2.1
1-Me-Pyrene	Not a Weston Target List Compound								
Benzo(g,h,i)Fluoranthene	Not a Weston Target List Compound								
Benz(a)Anthracene	0.39	0.39	1.76	0.02	1.29	1.03	0.23	48	0.0
Chrysene & Triphenylene	0.81	0.62	2.50	0.08	2.33	2.05	0.61	48	0.0
Benzo(b)&(k)Fluoranthene	0.63	0.54	2.10	n.d.	1.88	1.49	0.44	48	2.1
Benzo(e)Pyrene	0.34	0.29	1.19	n.d.	0.92	0.80	0.24	48	2.1
Benzo(a)Pyrene	0.28	0.30	1.32	n.d.	0.92	0.76	0.19	48	2.1
Perylene	0.05	0.05	0.25	n.d.	0.15	0.15	0.03	48	22.9
Indeno(1,2,3-cd)Pyrene	0.28	0.26	1.07	n.d.	0.79	0.69	0.18	48	6.3
Dibenz(ac)&(ah)Anthracene	0.03	0.04	0.13	n.d.	0.10	0.09	0.01	48	50.0
Benzo(b)Chrysene	Not a Weston Target List Compound								
Benzo(g,h,i)Perylene	0.69	0.63	3.13	n.d.	2.05	1.60	0.53	48	2.1
Anthanthrene			0.10	n.d.				48	93.7

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% Weston: all non-detects are replaced with 0.0 before calculating statistics

TABLE XXVIII Polycyclic Aromatic Hydrocarbons: Walpole Island - (ng/m^3).

Walpole Island (ECC&P) - 1988	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	1.10	0.78	3.62	0.27	2.38	2.16	0.82	42	0.0
Pyrene	0.57	0.50	2.83	0.12	1.11	1.05	0.38	42	0.0
Benzo(a)Fluorene	0.09	0.11	0.53	n.d.	0.29	0.22	0.07	42	14.3
Benzo(b)Fluorene	0.03	0.06	0.28	n.d.	0.18	0.07	0.01	42	48.8
1-Me-Pyrene	0.02	0.04	0.19	n.d.	0.08	0.05	n.d.	42	62.8
Benzo(g,h,i)Fluoranthene	0.07	0.10	0.48	n.d.	0.23	0.23	0.04	42	40.5
Benz(a)Anthracene	0.06	0.09	0.35	n.d.	0.26	0.20	0.03	42	40.5
Chrysene & Triphenylene	0.23	0.21	0.91	n.d.	0.67	0.57	0.18	42	9.5
Benzo(b)&(k)Fluoranthene	0.37	0.32	1.27	n.d.	1.10	0.80	0.28	42	11.9
Benzo(e)Pyrene	0.10	0.09	0.43	n.d.	0.31	0.23	0.08	42	14.3
Benzo(a)Pyrene	0.07	0.08	0.35	n.d.	0.19	0.15	0.05	42	40.5
Perylene			0.05	n.d.				42	92.9
Indeno(1,2,3-cd)Pyrene	0.08	0.11	0.46	n.d.	0.31	0.25	0.06	42	45.2
Dibenz(ac)&(ah)Anthracene			0.03	n.d.				42	92.9
Benzo(b)Chrysene	Not Detected by ECC&P at This Site in 1988							42	100
Benzo(g,h,i)Perylene	0.07	0.08	0.37	n.d.	0.24	0.16	0.06	42	40.5
Anthanthrene	Not Detected by ECC&P at This Site in 1988							42	100

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XXVIII (Continued) ng/m^3

Walpole Island (ECC&P) - 1989	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	1.24	1.42	6.62	n.d.	5.83	2.23	0.82	50	6.0
Pyrene	0.70	0.75	4.12	0.06	2.25	1.28	0.43	50	0.0
Benzo(a)Fluorene	0.15	0.25	1.48	n.d.	0.56	0.27	0.08	50	12.0
Benzo(b)Fluorene	0.05	0.15	1.05	n.d.	0.16	0.09	n.d.	50	52.0
1-Me-Pyrene	0.01	0.03	0.15	n.d.	0.07	0.05	n.d.	50	66.0
Benzo(g,h,i)Fluoranthene	0.06	0.11	0.67	n.d.	0.24	0.17	0.02	50	48.0
Benz(a)Anthracene	0.05	0.09	0.58	n.d.	0.16	0.15	0.04	50	36.0
Chrysene & Triphenylene	0.21	0.27	1.39	n.d.	0.80	0.58	0.13	50	24.0
Benzo(b)&(k)Fluoranthene	0.26	0.35	1.75	n.d.	0.75	0.59	0.17	50	34.0
Benzo(e)Pyrene	0.09	0.17	1.08	n.d.	0.31	0.23	0.05	50	38.0
Benzo(a)Pyrene	0.07	0.12	0.70	n.d.	0.28	0.15	0.02	50	46.0
Perylene			0.11	n.d.				50	92.0
Indeno(1;2,3-cd)Pyrene	0.08	0.19	1.24	n.d.	0.35	0.20	n.d.	50	56.0
Dibenz(ac)&(ah)Anthracene			0.20	n.d.				50	92.0
Benzo(b)Chrysene	Not Detected by ECC&P at This Site in 1989							50	100
Benzo(g,h,i)Perylene	0.04	0.09	0.55	n.d.	0.17	0.11	n.d.	50	58.0
Anthanthrene			0.07	n.d.				50	96.0

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XXVIII (Continued) ng/m^3

Walpole Island (ECC&P) - 1990	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	1.07	0.89	4.79	0.09	1.92	1.65	0.85	49	0.0
Pyrene	0.65	0.64	3.07	0.07	2.62	1.08	0.45	49	0.0
Benzo(a)Fluorene	0.09	0.12	0.63	n.d.	0.28	0.17	0.06	49	32.7
Benzo(b)Fluorene	0.03	0.05	0.24	n.d.	0.12	0.08	0.02	49	42.9
1-Me-Pyrene	0.02	0.03	0.13	n.d.	0.10	0.05	n.d.	49	55.1
Benzo(g,h,i)Fluoranthene	0.11	0.15	0.79	n.d.	0.33	0.23	0.07	49	12.2
Benz(a)Anthracene	0.04	0.07	0.47	n.d.	0.13	0.12	0.03	49	40.8
Chrysene & Triphenylene	0.29	0.31	1.73	n.d.	0.65	0.45	0.22	49	2.0
Benzo(b)&(k)Fluoranthene	0.48	0.60	3.86	n.d.	1.30	0.94	0.33	49	6.1
Benzo(e)Pyrene	0.12	0.18	0.94	n.d.	0.35	0.24	0.07	49	14.3
Benzo(a)Pyrene	0.10	0.18	1.17	n.d.	0.24	0.18	0.05	49	20.4
Perylene			0.19	n.d.				49	81.6
Indeno(1,2,3-cd)Pyrene	0.14	0.25	1.30	n.d.	0.36	0.30	0.08	49	16.3
Dibenz(ac)&(ah)Anthracene			0.02	n.d.				49	93.9
Benzo(b)Chrysene	Not Detected by ECC&P at This Site in 1990							49	100
Benzo(g,h,i)Perylene	0.21	0.68	4.76	n.d.	0.31	0.24	0.10	49	12.2
Anthanthrene			0.63	n.d.				49	93.9

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XXVIII (Continued) ng/m^3

Walpole Island (ECC&P) - 1991	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	0.76	0.44	1.99	0.19	1.63	1.59	0.64	38	0.0
Pyrene	0.41	0.24	0.97	0.11	0.91	0.90	0.36	38	0.0
Benzo(a)Fluorene	0.11	0.12	0.63	n.d.	0.29	0.23	0.07	38	7.9
Benzo(b)Fluorene	0.03	0.06	0.32	n.d.	0.15	0.09	n.d.	38	52.6
1-Me-Pyrene	0.02	0.05	0.32	n.d.	0.07	0.05	n.d.	38	73.7
Benzo(g,h,i)Fluoranthene	0.09	0.15	0.79	n.d.	0.42	0.26	0.04	38	28.9
Benz(a)Anthracene	0.03	0.04	0.20	n.d.	0.12	0.08	0.01	38	50.0
Chrysene & Triphenylene	0.21	0.19	0.87	0.05	0.84	0.52	0.15	38	0.0
Benzo(b)&(k)Fluoranthene	0.22	0.20	0.95	n.d.	0.74	0.37	0.15	38	2.6
Benzo(e)Pyrene	0.14	0.16	0.79	n.d.	0.46	0.42	0.08	38	5.3
Benzo(a)Pyrene	0.09	0.16	0.79	n.d.	0.45	0.29	0.04	38	23.7
Perylene			0.16	n.d.				38	84.2
Indeno(1,2,3-cd)Pyrene	0.13	0.17	0.73	n.d.	0.68	0.33	0.07	38	23.7
Dibenz(ac)&(ah)Anthracene			0.13	n.d.				38	92.1
Benzo(b)Chrysene			0.16	n.d.				38	92.1
Benzo(g,h,i)Perylene	0.20	0.25	1.04	n.d.	0.87	0.68	0.09	38	94.7
Anthanthrene			0.11	n.d.				38	92.1

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XXVIII (Continued) ng/m^3

Walpole Island (ECC&P) - 1992	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	0.72	0.45	2.10	0.22	2.10	1.07	0.72	17	0.0
Pyrene	0.40	0.23	1.10	0.11	1.10	0.73	0.34	17	0.0
Benzo(a)Fluorene	0.07	0.04	0.20	0.02	0.20	0.10	0.06	17	0.0
Benzo(b)Fluorene	0.02	0.02	0.07	n.d.	0.07	0.04	0.02	17	23.5
1-Me-Pyrene	0.01	0.01	0.03	n.d.	0.03	0.03	0.01	17	41.2
Benzo(g,h,i)Fluoranthene	0.06	0.05	0.18	n.d.	0.18	0.14	0.04	17	5.9
Benz(a)Anthracene	0.02	0.03	0.11	n.d.	0.11	0.04	0.01	17	41.2
Chrysene & Triphenylene	0.10	0.11	0.47	0.02	0.47	0.19	0.06	17	0.0
Benzo(b)&(k)Fluoranthene	0.19	0.28	1.11	0.03	1.11	0.65	0.09	17	0.0
Benzo(e)Pyrene	0.14	0.40	1.70	n.d.	1.70	0.12	0.03	17	5.9
Benzo(a)Pyrene	0.02	0.02	0.70	n.d.	0.07	0.05	0.02	17	29.4
Perylene	0.01	0.01	0.05	n.d.	0.05	0.03	n.d.	17	76.5
Indeno(1,2,3-cd)Pyrene	0.06	0.10	0.40	n.d.	0.40	0.14	0.02	17	5.9
Dibenz(ac)&(ah)Anthracene	Not Detected by ECC&P at This Site in 1992							17	100
Benzo(b)Chrysene	Not Detected by ECC&P at This Site in 1992							17	100
Benzo(g,h,i)Perylene	0.05	0.06	0.22	0.01	0.22	0.14	0.02	17	0.0
Anthanthrene	Not Detected by ECC&P at This Site in 1992							17	100

c.l. is censoring level
for c.l. < 80% ECC&P: all non-detects are replaced with 0.0 before calculating statistics

TABLE XXVIII (Continued) ng/m^3

Walpole Island (ECC&P) 01/88 to 09/92	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
Fluoranthene	1.03	0.96	6.62	n.d.	2.29	1.92	0.79	196	1.5
Pyrene	0.57	0.57	4.12	0.06	1.40	1.04	0.39	196	0.0
Benzo(a)Fluorene	0.11	0.16	1.48	n.d.	0.29	0.23	0.07	196	15.3
Benzo(b)Fluorene	0.04	0.09	1.05	n.d.	0.14	0.08	0.01	196	46.9
1-Me-Pyrene	0.02	0.03	0.32	n.d.	0.07	0.05	n.d.	196	62.8
Benzo(g,h,i)Fluoranthene	0.08	0.12	0.79	n.d.	0.29	0.18	0.04	196	29.1
Benz(a)Anthracene	0.05	0.07	0.58	n.d.	0.17	0.12	0.03	196	41.3
Chrysene & Triphenylene	0.22	0.25	1.73	n.d.	0.67	0.49	0.16	196	8.7
Benzo(b)&(k)Fluoranthene	0.32	0.40	3.86	n.d.	1.10	0.74	0.21	196	10.7
Benzo(e)Pyrene	0.11	0.19	1.70	n.d.	0.37	0.25	0.07	196	17.9
Benzo(a)Pyrene	0.07	0.14	1.17	n.d.	0.29	0.16	0.04	196	32.7
Perylene			0.19	n.d.				196	86.7
Indeno(1,2,3-cd)Pyrene	0.10	0.18	1.30	n.d.	0.40	0.25	0.05	196	33.2
Dibenz(ac)&(ah)Anthracene			0.20	n.d.				196	93.4
Benzo(b)Chrysene			0.16	n.d.				196	98.5
Benzo(g,h,i)Perylene	0.12	0.37	4.76	n.d.	0.38	0.23	0.05	196	27.5
Anthanthrene			0.63	n.d.				196	95.9

c.l. is censoring level
for c.l. $\geq$ 80% only the maximum and minimum concentrations are reported
for c.l. $<$ 80% ECC&P: all non-detects are replaced with 0.0 before calculating statistics

5.5 Dioxins and Furans

Results of monitoring for dioxins and furans are presented in Tables XXX (Windsor); XXXI (Walpole Island). For both MOEE and ECC&P data all non-detects have been replaced with half the d.l. before calculating statistics. Statistics are presented for homologue group totals, total dioxin, total furan, and total dioxin+furan. International Toxicity Equivalency Factors (I-TEF) have been applied to the homologue group totals following Birmingham[22] to calculate 2,3,7,8-TCDD toxicity equivalents (TEQ). Details are provided in reference 22. The calculations are shown in the table below.

TABLE XXIX Toxicity Equivalency (TEQ) Calculation From Group Total Concentration Data

Dioxins			%AAC		I-TEF		
T4D	concentration	*	0.05	*	1	=	TEQ
P5D	concentration	*	0.10	*	0.5	=	TEQ
H6D	concentration	*	0.30	*	0.1	=	TEQ
H7D	concentration	*	0.50	*	0.01	=	TEQ
O8D	concentration	*	1.00	*	0.001	=	TEQ
Furans			**%AAC**		**I-TEF**		
T4F	concentration	*	0.10	*	0.1	=	TEQ
P5F	concentration	*	0.15	*	0.5	=	TEQ
P5F	concentration	*	0.10	*	0.05	=	TEQ
H6F	concentration	*	0.50	*	0.1	=	TEQ
H7F	concentration	*	0.50	*	0.01	=	TEQ
O8F	concentration	*	1.00	*	0.001	=	TEQ

%AAC is percent of toxic congeners in ambient air concentrations expressed as a decimal (for example: 5% of the T4D ambient air concentration is expected to be 2,3,7,8-CDD)

Summary statistics generated after performing the above calculations are presented in the tables under the heading "Toxic Equivalent".

TABLE XXX Dioxins and Furans: Windsor - site 12008 MOEE (pg/m^3).

CONCENTRATION										
1989	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
T4D	1.27	1.314	3.9	0.18	3.9	3.9	2.05	0.665	8	0
P5D	1.41	2.497	7.2	0.05	7.2	7.2	1.55	0.32	8	0
H6D	1.32	2.15	6.5	n.d.	6.5	6.5	1.3	0.39	8	12.5
H7D	1.656	1.698	5.2	n.d.	5.2	5.2	2.4	1.17	8	12.5
O8D	1.447	1.304	4.1	n.d.	4.1	4.1	2.1	1.05	8	12.5
TOTD	7.105	8.304	26.9	1.19	26.9	26.9	7.02	4.88	8	0
T4F	6.287	9.258	28.0	0.6	28.0	28.0	7.8	1.65	8	0
P5F	2.16	2.899	7.5	0.2	7.5	7.5	3.55	0.75	8	0
H6F	1.351	1.717	5.0	0.2	5.0	5.0	1.95	0.515	8	0
H7F	1.176	1.859	5.6	0.13	5.6	5.6	1.3	0.36	8	0
O8F	0.361	0.484	1.5	n.d.	1.5	1.5	3.85	0.215	8	12.5
TOTF	11.34	11.91	29.6	1.29	29.6	29.6	23.09	4.37	8	0
TOTDF	18.44	18.30	53.7	3.87	53.7	53.7	30.94	9.825	8	0
TOXIC EQUIVALENT										
	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
T4D	0.0635	0.0657	0.195	0.009	0.195	0.195	0.1025	0.0333	8	0
P5D	0.0705	0.1249	0.36	0.0025	0.36	0.36	0.0775	0.016	8	0
H6D	0.0397	0.0646	0.195	n.d.	0.195	0.195	0.039	0.0117	8	12.5
H7D	0.0083	0.0085	0.026	n.d.	0.026	0.026	0.012	0.0059	8	12.5
O8D	0.0015	0.0013	0.0041	n.d.	0.0041	0.0041	0.0021	0.0011	8	12.5
TOTD	0.1834	0.254	0.7801	0.0361	0.7801	0.7801	0.2049	0.0708	8	0
T4F	0.0629	0.0926	0.28	0.006	0.28	0.28	0.078	0.0165	8	0
P5F	0.1728	0.2319	0.6	0.016	0.6	0.6	0.284	0.06	8	0
H6F	0.0676	0.0858	0.25	0.01	0.25	0.25	0.0975	0.0258	8	0
H7F	0.0059	0.0093	0.028	0.0007	0.028	0.028	0.0065	0.0018	8	0
O8F	0.0004	0.0005	0.0015	n.d.	0.0015	0.0015	0.0004	0.0002	8	12.5
TOTF	0.3095	0.3474	0.9515	0.0331	0.9515	0.9515	0.5455	0.1284	8	0
TOTDF	0.4929	0.5883	1.732	0.0935	1.732	1.732	0.7504	0.1907	8	0

TABLE XXX (Continued). site 12008 MOEE (pg/m^3)

CONCENTRATION										
1990	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
T4D	0.3272	0.3242	1.304	0.028	1.304	0.57	0.3	0.25	13	0
P5D	0.2034	0.1456	0.5	n.d.	0.5	0.443	0.25	0.2	13	7.7
H6D	0.2838	0.2452	0.92	0.039	0.92	0.53	0.344	0.3	13	0
H7D	0.4511	0.4725	1.4	0.077	1.4	1.3	0.64	0.137	13	0
O8D	0.8111	0.7554	2.4	0.028	2.4	1.8	1.3	0.4	13	0
TOTD	2.077	1.480	4.88	0.584	4.88	4.03	2.78	1.7	13	0
T4F	0.9718	0.5639	2.0	0.042	2.0	1.9	1.2	0.95	13	0
P5F	0.4385	0.3514	1.18	n.d.	1.18	0.9	0.53	0.39	13	7.7
H6F	0.2501	0.1998	0.568	0.027	0.568	0.55	0.4	0.21	13	0
H7F	0.2396	0.2291	0.77	n.d.	0.77	0.62	0.3	0.2	13	15.4
O8F	0.1521	0.1039	0.33	n.d.	0.33	0.3	0.24	0.106	13	7.7
TOTF	2.052	1.223	4.21	0.284	4.21	3.5	3.17	1.549	13	0
TOTDF	4.129	2.402	8.05	0.868	8.05	6.99	5.939	4.3	13	0
TOXIC EQUIVALENT										
	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
T4D	0.0164	0.0162	0.0652	0.0014	0.0652	0.0285	0.015	0.0125	13	0
P5D	0.0102	0.0073	0.025	n.d.	0.025	0.0222	0.0125	0.01	13	7.7
H6D	0.0085	0.0074	0.0276	0.0012	0.0276	0.0159	0.0103	0.009	13	0
H7D	0.0023	0.0024	0.007	0.0004	0.007	0.0065	0.0032	0.0007	13	0
O8D	0.0008	0.0008	0.0024	0.0000	0.0024	0.0018	0.0013	0.0004	13	0
TOTD	0.0381	0.0262	0.0986	0.0058	0.0986	0.0789	0.041	0.0397	13	0
T4F	0.0097	0.0056	0.02	0.0004	0.02	0.019	0.012	0.0095	13	0
P5F	0.0351	0.0281	0.0944	n.d.	0.0944	0.072	0.0424	0.0312	13	7.7
H6F	0.0125	0.01	0.0284	0.0014	0.0284	0.0275	0.02	0.0105	13	0
H7F	0.0012	0.0012	0.0039	n.d.	0.0039	0.0031	0.0015	0.001	13	15.4
O8F	0.0002	0.0001	0.0003	n.d.	0.0003	0.0003	0.0002	0.0001	13	7.7
TOTF	0.0587	0.0421	0.1381	0.0059	0.1381	0.1156	0.085	0.0523	13	0
TOTDF	0.0968	0.0642	0.2367	0.0117	0.2367	0.1639	0.1486	0.0751	13	0

TABLE XXX (Continued). site 12008 MOEE (pg/m^3)

CONCENTRATION										
1991	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
T4D	0.2578	0.1366	0.45	n.d.	0.45	0.43	0.385	0.235	12	8.3
P5D	0.2057	0.149	0.47	n.d.	0.47	0.45	0.305	0.16	12	8.3
H6D	0.2888	0.1303	0.5	0.096	0.5	0.48	0.405	0.245	12	0
H7D	0.3918	0.1671	0.65	0.22	0.65	0.63	0.62	0.32	11	0
O8D	0.575	0.2497	1.1	0.34	1.1	0.9	0.78	0.46	12	0
TOTD	1.687	0.5938	2.79	0.913	2.79	2.4	2.23	1.42	12	0
T4F	2.069	2.974	10.0	0.042	10.0	6.3	1.41	0.92	12	0
P5F	1.138	1.775	6.3	0.024	6.3	2.8	0.82	0.42	12	0
H6F	0.8467	1.363	4.7	0.061	4.7	2.4	0.6	0.29	12	0
H7F	0.3718	0.4723	1.7	0.1	1.7	0.72	0.31	0.19	11	0
O8F	0.2124	0.353	1.3	n.d.	1.3	0.35	0.165	0.078	12	8.3
TOTF	4.607	6.135	19.2	0.287	19.2	15.58	4.0	1.833	12	0
TOTDF	6.294	6.345	21.6	1.2	21.6	16.84	6.435	3.267	12	0
TOXIC EQUIVALENT										
	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
T4D	0.0129	0.0068	0.0225	n.d.	0.0225	0.0215	0.0193	0.0118	12	8.3
P5D	0.0103	0.0074	0.0235	n.d.	0.0235	0.0225	0.0152	0.008	12	8.3
H6D	0.0087	0.0039	0.015	0.0029	0.015	0.0144	0.0122	0.0074	12	0
H7D	0.002	0.0008	0.0032	0.0011	0.0032	0.0032	0.0031	0.0016	11	0
O8D	0.0006	0.0003	0.0011	0.0003	0.0011	0.0009	0.0008	0.0005	12	0
TOTD	0.0342	0.016	0.0636	0.0053	0.0636	0.0503	0.0477	0.0309	12	0
T4F	0.0207	0.0297	0.1	0.0004	0.1	0.063	0.0141	0.0092	12	0
P5F	0.0910	0.1420	0.504	0.0019	0.504	0.224	0.0656	0.0336	12	0
H6F	0.0423	0.0682	0.235	0.0031	0.235	0.12	0.03	0.0145	12	0
H7F	0.0019	0.0024	0.0085	0.0005	0.0085	0.0036	0.0016	0.001	11	0
O8F	0.0002	0.0004	0.0013	n.d.	0.0013	0.0004	0.0002	0.0001	12	8.3
TOTF	0.156	0.2359	0.8107	0.006	0.8107	0.4456	0.1118	0.0574	12	0
TOTDF	0.1902	0.2451	0.8743	0.0113	0.8743	0.4718	0.162	0.0899	12	0

TABLE XXX (Continued). site 12008 MOEE (pg/m^3)

CONCENTRATION										
1992	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
T4D	0.461	0.2233	0.87	0.2	0.87	0.765	0.6	0.475	10	0
P5D	0.542	0.3601	1.4	0.21	1.4	1.105	0.74	0.445	10	0
H6D	0.695	0.2973	1.1	0.29	1.1	1.1	0.94	0.61	10	0
H7D	0.827	0.4212	1.6	0.31	1.6	1.5	1.1	0.695	10	0
O8D	0.875	0.4261	1.6	0.35	1.6	1.55	1.1	0.76	10	0
TOTD	3.4	1.265	5.57	1.38	5.57	5.195	4.26	3.385	10	0
T4F	1.664	0.7941	2.9	0.8	2.9	2.85	2.0	1.75	10	0
P5F	1.086	0.5522	2.2	0.52	2.2	1.95	1.4	0.875	10	0
H6F	0.926	0.6456	2.2	0.29	2.2	2.05	1.21	0.615	10	0
H7F	0.445	0.2923	1.0	0.21	1.0	0.975	0.53	0.315	10	0
O8F	0.167	0.0908	0.36	0.088	0.36	0.33	0.18	0.13	10	0
TOTF	4.288	2.211	8.66	1.99	8.66	7.755	5.47	3.629	10	0
TOTDF	7.688	3.1	14.23	4.053	14.23	12.67	9.07	7.089	10	0
TOXIC EQUIVALENT										
	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
T4D	0.0231	0.0112	0.0435	0.01	0.0435	0.0382	0.03	0.0238	10	0
P5D	0.0271	0.018	0.07	0.0105	0.07	0.0553	0.037	0.0223	10	0
H6D	0.0209	0.0089	0.033	0.0087	0.033	0.033	0.0282	0.0183	10	0
H7D	0.0041	0.0021	0.008	0.0016	0.008	0.0075	0.0055	0.0035	10	0
O8D	0.0009	0.0004	0.0016	0.0004	0.0016	0.0016	0.0011	0.0008	10	0
TOTD	0.076	0.0331	0.1289	0.0321	0.1289	0.122	0.103	0.0766	10	0
T4F	0.0166	0.0079	0.029	0.008	0.029	0.0285	0.02	0.0175	10	0
P5F	0.0869	0.0442	0.176	0.0416	0.176	0.156	0.112	0.07	10	0
H6F	0.0463	0.0323	0.11	0.0145	0.11	0.1025	0.0605	0.0308	10	0
H7F	0.0022	0.0015	0.005	0.0011	0.005	0.0049	0.0026	0.0016	10	0
O8F	0.0002	0.0001	0.0004	0.0001	0.0004	0.0003	0.0002	0.0001	10	0
TOTF	0.1522	0.0836	0.3204	0.0655	0.3204	0.2882	0.1873	0.1193	10	0
TOTDF	0.2282	0.1051	0.4355	0.1205	0.4355	0.3895	0.2875	0.2185	10	0

TABLE XXX (Continued). site 12008 ECC&P (pg/m^3)

CONCENTRATION										
1989	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
T4D	0.4185	0.5087	1.471	0.0007	1.471	1.19	0.781	0.1964	11	9.1
P5D	0.6062	0.7371	2.357	0.0012	2.357	1.322	1.255	0.3828	11	9.1
H6D	0.9923	1.036	3.522	0.2123	3.522	1.971	1.789	0.5007	11	0.0
H7D	1.182	0.934	2.898	0.2092	2.898	2.393	2.248	0.6328	11	0.0
O8D	1.512	1.339	4.721	0.3084	4.721	2.938	2.116	0.9883	11	0.0
TOTD	4.711	3.651	12.152	0.8796	12.152	8.438	7.015	2.757	11	0.0
T4F	1.284	0.969	3.693	0.2991	3.693	1.829	1.728	0.8858	11	0.0
P5F	1.091	0.9245	3.393	0.1146	3.393	1.595	1.546	0.9379	11	0.0
H6F	1.051	0.8915	3.328	0.1806	3.328	1.467	1.435	0.9837	11	0.0
H7F	0.6220	0.5933	2.218	0.1192	2.218	0.896	0.845	0.5031	11	0.0
O8F	0.2378	0.2096	0.7109	0.0634	0.7109	0.5278	0.3560	0.1633	11	0.0
TOTF	4.285	3.435	13.34	0.8584	13.34	6.095	5.403	3.896	11	0.0
TOTDF	9.00	6.73	25.49	1.74	25.49	13.84	12.96	7.19	11	0.0
TOXIC EQUIVALENT										
	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
T4D	0.0209	0.0254	0.0735	0.0000	0.0735	0.0595	0.0391	0.0098	11	9.1
P5D	0.0303	0.0369	0.1178	0.0001	0.1178	0.0661	0.0628	0.0191	11	9.1
H6D	0.0298	0.0311	0.1057	0.0064	0.1057	0.0591	0.0537	0.0150	11	0.0
H7D	0.0059	0.0047	0.0145	0.0010	0.0145	0.0120	0.0112	0.0032	11	0.0
O8D	0.0015	0.0013	0.0047	0.0003	0.0047	0.0029	0.0021	0.001	11	0.0
TOTD	0.0884	0.0963	0.3134	0.0152	0.3134	0.1842	0.1777	0.0498	11	0.0
T4F	0.0128	0.0097	0.0369	0.0030	0.0369	0.0183	0.0174	0.0089	11	0.0
P5F	0.0873	0.0739	0.2714	0.0092	0.2714	0.1276	0.1237	0.0750	11	0.0
H6F	0.0525	0.0446	0.1664	0.0090	0.1664	0.0734	0.0718	0.0492	11	0.0
H7F	0.0031	0.0031	0.0111	0.0006	0.0111	0.0045	0.0042	0.0025	11	0.0
O8F	0.0002	0.0002	0.0007	0.0001	0.0007	0.0005	0.0004	0.0002	11	0.0
TOTF	0.1560	0.1295	0.4865	0.0259	0.4865	0.2202	0.2109	0.1496	11	0.0
TOTDF	0.2444	0.2223	0.80	0.0430	0.80	0.4044	0.3886	0.1995	11	0.0

TABLE XXX (Continued). site 12008 ECC&P (pg/m^3)

CONCENTRATION										
1990	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
T4D	0.2138	0.2053	0.7484	0.0373	0.7484	0.5872	0.2753	0.1255	15	0.0
P5D	0.5603	0.8407	2.86	0.0804	2.86	2.108	0.550	0.1641	15	0.0
H6D	1.109	1.973	8.017	0.1859	8.017	1.91	1.092	0.3985	15	0.0
H7D	1.435	2.771	11.30	0.2464	11.30	2.244	0.9349	0.6449	15	0.0
O8D	1.101	1.227	5.443	0.4446	5.443	1.261	0.9362	0.8453	15	0.0
TOTD	4.420	6.785	28.37	1.136	28.37	6.718	3.413	2.401	15	0.0
T4F	0.7884	0.4645	1.633	0.1989	1.633	1.543	1.128	0.7073	15	0.0
P5F	0.9093	0.9673	4.078	0.1645	4.078	1.577	1.009	0.7207	15	0.0
H6F	0.6310	0.4502	1.502	0.1451	1.502	1.429	0.9109	0.5328	15	0.0
H7F	0.4206	0.2949	1.022	0.0958	1.022	0.9405	0.6997	0.3572	15	0.0
O8F	0.1572	0.0984	0.3597	0.0423	0.3597	0.3233	0.2525	0.1164	15	0.0
TOTF	2.907	2.099	8.401	0.7468	8.401	5.434	3.451	2.768	15	0.0
TOTDF	7.326	8.040	33.81	2.745	33.81	15.12	6.864	4.336	15	0.0
TOXIC EQUIVALENT										
	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
T4D	0.0107	0.0103	0.0374	0.0019	0.0374	0.0294	0.0138	0.0063	15	0.0
P5D	0.0280	0.0420	0.1430	0.0040	0.1430	0.1054	0.0275	0.0082	15	0.0
H6D	0.0333	0.0592	0.2405	0.0056	0.2405	0.0573	0.0328	0.0119	15	0.0
H7D	0.0072	0.0139	0.0565	0.0012	0.0565	0.0112	0.0047	0.0032	15	0.0
O8D	0.0011	0.0012	0.0054	0.0004	0.0054	0.0013	0.0009	0.0008	15	0.0
TOTD	0.0803	0.1197	0.4829	0.0186	0.4829	0.1672	0.0657	0.0319	15	0.0
T4F	0.0079	0.0046	0.0163	0.002	0.0163	0.0154	0.0113	0.0071	15	0.0
P5F	0.0727	0.0774	0.3263	0.0131	0.3263	0.1261	0.0807	0.0577	15	0.0
H6F	0.0315	0.0225	0.0751	0.0073	0.0751	0.0714	0.0455	0.0266	15	0.0
H7F	0.0021	0.0015	0.0051	0.0005	0.0051	0.0047	0.0035	0.0018	15	0.0
O8F	0.0002	0.0001	0.0004	0.0000	0.0004	0.0003	0.0002	0.0001	15	0.0
TOTF	0.1144	0.1020	0.4222	0.0236	0.4222	0.2139	0.1263	0.0975	15	0.0
TOTDF	0.1947	0.1958	0.6968	0.0576	0.6968	0.5893	0.1787	0.1204	15	0.0

TABLE XXX (Continued). site 12008 ECC&P (pg/m^3)

CONCENTRATION										
1991	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
T4D	0.1971	0.2630	0.9773	0.0054	0.9773	0.4199	0.2284	0.0992	13	15.4
P5D	0.3286	0.670	2.437	0.0012	2.437	0.8132	0.1638	0.1010	13	23.1
H6D	0.5823	0.9387	3.441	0.0095	3.441	1.508	0.4168	0.2280	13	7.7
H7D	0.8280	0.8819	3.412	0.0084	3.412	1.357	0.9711	0.5966	13	7.7
O8D	0.9011	0.6442	2.551	0.1033	2.551	1.453	1.044	0.9618	13	0.0
TOTD	2.837	3.256	12.82	0.1360	12.82	5.000	2.747	1.875	13	0.0
T4F	2.283	4.944	18.27	0.2027	18.27	4.539	0.8241	0.6597	13	0.0
P5F	2.000	3.789	12.19	0.0617	12.19	8.350	1.347	0.3237	13	0.0
H6F	1.148	2.029	6.839	0.0569	6.839	3.816	0.6733	0.2284	13	0.0
H7F	0.6381	1.00	3.697	0.0179	3.697	1.240	0.6888	0.2279	13	0.0
O8F	0.2247	0.3063	0.9002	0.0094	0.9002	0.8780	0.2392	0.1150	13	0.0
TOTF	6.294	10.76	35.13	0.4101	35.13	24.30	4.535	1.637	13	0.0
TOTDF	9.131	12.67	37.12	0.5461	37.12	36.87	7.041	4.025	13	0.0
TOXIC EQUIVALENT										
	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
T4D	0.0099	0.0131	0.0489	0.0003	0.0489	0.0210	0.0114	0.005	13	0.0
P5D	0.0164	0.0335	0.1218	0.0001	0.1218	0.0407	0.0082	0.0051	13	0.0
H6D	0.0175	0.0282	0.1032	0.0003	0.1032	0.0452	0.0125	0.0068	13	0.0
H7D	0.0041	0.0044	0.0171	0.0000	0.0171	0.0068	0.0049	0.003	13	0.0
O8D	0.0009	0.0006	0.0026	0.0001	0.0026	0.0015	0.0010	0.001	13	0.0
TOTD	0.0488	0.0784	0.2935	0.0012	0.2935	0.1087	0.0287	0.0226	13	0.0
T4F	0.0228	0.0494	0.1827	0.0020	0.1827	0.0454	0.0082	0.0066	13	0.0
P5F	0.1600	0.3031	0.9754	0.0049	0.9754	0.6680	0.1078	0.0259	13	0.0
H6F	0.0574	0.1014	0.3419	0.0028	0.3419	0.1908	0.0337	0.0114	13	0.0
H7F	0.0032	0.0050	0.0185	0.0001	0.0185	0.0062	0.0034	0.0011	13	0.0
O8F	0.0002	0.0003	0.0009	0.0000	0.0009	0.0009	0.0002	0.0001	13	0.0
TOTF	0.2437	0.4400	1.353	0.0110	1.353	1.075	0.1637	0.0476	13	0.0
TOTDF	0.2925	0.4869	1.368	0.0122	1.368	1.367	0.2179	0.0702	13	0.0

TABLE XXX (Continued). site 12016 ECC&P (pg/m^3)

CONCENTRATION										
1991	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
T4D	0.1930	0.2380	0.7563	n.d.	0.7563	0.6207	0.2094	0.0829	13	7.7
P5D	0.3162	0.5552	1.723	n.d.	1.723	1.281	0.1903	0.0555	13	30.8
H6D	0.7864	1.214	3.529	n.d.	3.529	3.318	0.4559	0.2456	13	7.7
H7D	1.133	1.267	4.300	0.2354	4.300	3.177	1.425	0.4946	13	0.0
O8D	1.173	0.9723	3.757	0.2625	3.757	1.958	1.537	0.9870	13	0.0
TOTD	3.601	4.079	13.41	0.5973	13.41	11.01	3.567	1.590	13	0.0
T4F	0.8672	1.084	4.020	0.1687	4.020	2.107	0.858	0.4399	13	0.0
P5F	1.151	1.918	5.713	0.0350	5.713	4.894	0.4602	0.2845	13	0.0
H6F	1.420	2.415	7.449	0.0811	7.449	5.966	1.240	0.2390	13	0.0
H7F	1.057	1.828	6.089	0.0589	6.089	3.856	0.9127	0.2615	13	0.0
O8F	0.4145	0.7164	2.619	n.d.	2.619	0.9331	0.3324	0.1509	13	7.7
TOTF	4.910	7.848	25.89	0.3818	25.89	17.76	4.422	1.198	13	0.0
TOTDF	8.511	11.88	39.30	0.9792	39.30	28.76	7.989	2.956	13	0.0
TOXIC EQUIVALENT										
	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
T4D	0.0096	0.0119	0.0378	n.d.	0.0378	0.0310	0.0105	0.0041	13	7.7
P5D	0.0158	0.0277	0.0861	n.d.	0.0861	0.0641	0.0095	0.0028	13	30.8
H6D	0.0236	0.0364	0.1059	n.d.	0.1059	0.0995	0.0137	0.0074	13	7.7
H7D	0.0057	0.0063	0.0215	0.0012	0.0215	0.0159	0.0071	0.0025	13	0.0
O8D	0.0012	0.001	0.0037	0.0003	0.0037	0.0019	0.0015	0.001	13	0.0
TOTD	0.0559	0.0819	0.2409	0.0046	0.2409	0.2267	0.0378	0.0193	13	0.0
T4F	0.0087	0.0108	0.0402	0.0017	0.0402	0.0211	0.0086	0.0044	13	0.0
P5F	0.0921	0.1535	0.4571	0.0028	0.4571	0.3915	0.0368	0.0228	13	0.0
H6F	0.0710	0.1207	0.3724	0.0041	0.3724	0.2983	0.0620	0.0119	13	0.0
H7F	0.0053	0.0091	0.0304	0.0003	0.0304	0.0193	0.0046	0.0013	13	0.0
O8F	0.0004	0.0007	0.0026	n.d.	0.0026	0.0009	0.0003	0.0002	13	7.7
TOTF	0.1775	0.2936	0.9028	0.0091	0.9028	0.7311	0.1140	0.0382	13	0.0
TOTDF	0.2333	0.3743	1.129	0.0145	1.129	0.9720	0.1438	0.0586	13	0.0

TABLE XXX (Continued). site 12057 MOEE (pg/m^3)

CONCENTRATION										
1992	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
T4D	0.25	0.1713	0.55	0.1	0.55	0.55	0.41	0.22	7	0
P5D	0.3213	0.2885	0.83	0.089	0.83	0.83	0.63	0.16	7	0
H6D	0.4457	0.3573	1.1	0.12	1.1	1.1	0.78	0.3	7	0
H7D	0.6886	0.4381	1.5	0.25	1.5	1.5	0.91	0.57	7	0
O8D	0.8457	0.461	1.6	0.36	1.6	1.6	1.3	0.82	7	0
TOTD	2.551	1.615	5.58	0.919	5.58	5.58	3.53	1.98	7	0
T4F	1.796	1.725	5.0	0.42	5.0	5.0	3.3	1.2	7	0
P5F	0.9186	1.0214	3.0	0.22	3.0	3.0	1.4	0.36	7	0
H6F	0.8314	1.023	3.0	0.14	3.0	3.0	1.2	0.35	7	0
H7F	0.4971	0.724	2.1	0.1	2.1	2.1	0.55	0.2	7	0
O8F	0.246	0.3789	1.1	0.046	1.1	1.1	0.17	0.12	7	0
TOTF	4.289	4.248	12.5	1.073	12.5	12.5	7.0	1.88	7	0
TOTDF	6.84	5.635	18.08	2.085	18.08	18.08	8.81	4.74	7	0
TOXIC EQUIVALENT										
	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
T4D	0.0125	0.0086	0.0275	0.005	0.0275	0.0275	0.0205	0.011	7	0
P5D	0.0161	0.0144	0.0415	0.0044	0.0415	0.0415	0.0315	0.008	7	0
H6D	0.0134	0.0107	0.033	0.0036	0.033	0.033	0.0234	0.009	7	0
H7D	0.0034	0.0022	0.0075	0.0012	0.0075	0.0075	0.0046	0.0029	7	0
O8D	0.0008	0.0005	0.0016	0.0004	0.0016	0.0016	0.0013	0.0008	7	0
TOTD	0.0462	0.0358	0.1111	0.0147	0.1111	0.1111	0.0805	0.0328	7	0
T4F	0.018	0.0173	0.05	0.0042	0.05	0.05	0.033	0.012	7	0
P5F	0.0735	0.0817	0.24	0.0176	0.24	0.24	0.112	0.0288	7	0
H6F	0.0416	0.0511	0.15	0.007	0.15	0.15	0.06	0.0175	7	0
H7F	0.0025	0.0036	0.0105	0.0005	0.0105	0.0105	0.0028	0.001	7	0
O8F	0.0002	0.0004	0.0011	0.0001	0.0011	0.0011	0.0002	0.0001	7	0
TOTF	0.1357	0.1463	0.4346	0.0342	0.4346	0.4346	0.1899	0.0504	7	0
TOTDF	0.1820	0.1803	0.5457	0.0554	0.5457	0.5457	0.2704	0.0736	7	0

TABLE XXX (Continued). MOEE 12008 & 12057 combined long-term statistics (pg/m^3)

CONCENTRATION									
	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
T4D	0.466	0.604	3.9	0.004	1.552	0.895	0.3	60	<80
P5D	0.454	0.981	7.2	0.003	1.4	0.81	0.24	59	<80
H6D	0.569	0.898	6.5	0.01	1.4	1.02	0.352	60	<80
H7D	0.748	0.807	5.2	0.025	2.0	1.5	0.53	59	<80
O8D	0.999	1.221	8.6	0.025	2.35	1.85	0.75	60	<80
TOTD	3.217	3.684	26.9	0.584	7.02	5.55	2.39	60	<80
T4F	2.116	3.904	28.0	0.042	7.8	4.15	1.1	60	<80
P5F	0.995	1.448	7.5	0.014	4.55	2.05	0.55	60	<80
H6F	0.723	1.013	5.0	0.027	2.95	2.05	0.375	60	<80
H7F	0.499	0.801	5.6	0.0095	1.7	1.0	0.26	59	<80
O8F	0.211	0.277	1.5	0.0065	0.8	0.365	0.12	60	<80
TOTF	4.535	5.95	29.6	0.284	19.3	10.6	2.405	60	<80
TOTDF	7.752	8.675	53.7	0.868	24.5	16.4	5.045	60	<80
TOXIC EQUIVALENT									
	Av	s.d.	Max	Min	95th	90th	50th	n	c.l.
T4D	0.0233	0.0302	0.195	0.0002	0.0776	0.0447	0.015	60	<80
P5D	0.0227	0.049	0.36	0.0002	0.07	0.0405	0.012	59	<80
H6D	0.0171	0.0269	0.195	0.0003	0.042	0.0306	0.0106	60	<80
H7D	0.0037	0.0040	0.026	0.0001	0.01	0.0075	0.0027	59	<80
O8D	0.001	0.0012	0.009	0.0000	0.0024	0.0019	0.0008	60	<80
TOTD	0.0674	0.1041	0.78	0.0053	0.1545	0.1131	0.0413	60	<80
T4F	0.0212	0.039	0.28	0.0004	0.078	0.0415	0.011	60	<80
P5F	0.0796	0.1159	0.6	0.0011	0.364	0.164	0.0444	60	<80
H6F	0.0361	0.0506	0.25	0.0013	0.1475	0.1025	0.0187	60	<80
H7F	0.0025	0.004	0.028	0.0001	0.0085	0.005	0.0013	59	<80
O8F	0.0002	0.0003	0.001	0.0000	0.0008	0.0004	0.0001	60	<80
TOTF	0.1396	0.1872	0.951	0.0059	0.5855	0.343	0.0811	60	<80
TOTDF	0.2069	0.2729	1.732	0.0113	0.71	0.4536	0.1293	60	<80

TABLE XXXI Dioxins and Furans: Walpole Island - ECC&P (pg/m^3).

CONCENTRATION										
1989	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
T4D	0.0148	0.0097	0.0340	n.d.	0.0340	0.0340	0.0182	0.0139	8	12.5
P5D	0.0360	0.0316	0.0820	0.0063	0.0820	0.0820	0.0667	0.0242	8	0.0
H6D	0.1243	0.0705	0.2360	0.0465	0.2360	0.2360	0.1791	0.1013	8	0.0
H7D	0.2703	0.1685	0.5923	0.0968	0.5923	0.5923	0.3800	0.2177	8	0.0
O8D	0.3573	0.2280	0.8604	0.1455	0.8604	0.8604	0.3994	0.3166	8	0.0
TOTD	0.8029	0.4616	1.671	0.3353	1.671	1.671	1.110	0.6493	8	0.0
T4F	0.1595	0.1011	0.3701	0.0674	0.3701	0.3701	0.1997	0.1357	8	0.0
P5F	0.1301	0.1160	0.3834	0.0196	0.3834	0.3834	0.1689	0.0914	8	0.0
H6F	0.1252	0.1160	0.3567	n.d.	0.3567	0.3567	0.1883	0.0009	8	12.5
H7F	0.0816	0.0561	0.1654	0.0257	0.1654	0.1654	0.1267	0.0664	8	0.0
O8F	0.0326	0.0210	0.0677	0.0135	0.0677	0.0677	0.0513	0.0202	8	0.0
TOTF	0.5291	0.3854	1.316	0.1733	1.316	1.316	0.7352	0.3803	8	0.0
TOTDF	1.332	0.7578	2.515	0.5459	2.515	2.515	1.923	1.081	8	0.0
TOXIC EQUIVALENT										
	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
T4D	0.0007	0.0005	0.0017	n.d.	0.0017	0.0017	0.0009	0.0007	8	12.5
P5D	0.0018	0.0016	0.0041	0.0003	0.0041	0.0041	0.0033	0.0001	8	0.0
H6D	0.0037	0.0021	0.0071	0.0014	0.0071	0.0071	0.0054	0.0030	8	0.0
H7D	0.0013	0.0008	0.0030	0.0005	0.0030	0.0030	0.0019	0.0011	8	0.0
O8D	0.0004	0.0002	0.0009	0.0002	0.0009	0.0009	0.0004	0.0003	8	0.0
TOTD	0.0080	0.0048	0.0152	0.0034	0.0152	0.0152	0.0127	0.0060	8	0.0
T4F	0.0016	0.0010	0.0037	0.0007	0.0037	0.0037	0.0020	0.0013	8	0.0
P5F	0.0104	0.0093	0.0307	0.0016	0.0307	0.0307	0.0135	0.0073	8	0.0
H6F	0.0063	0.0058	0.0178	n.d.	0.0178	0.0178	0.0094	0.0046	8	12.5
H7F	0.0004	0.0003	0.0008	0.0001	0.0008	0.0008	0.0006	0.0003	8	0.0
O8F	0.0000	0.0000	0.0001	0.0000	0.0001	0.0001	0.0001	0.0000	8	0.0
TOTF	0.0187	0.0160	0.0531	0.0054	0.0531	0.0531	0.0255	0.0127	8	0.0
TOTDF	0.0267	0.0195	0.0683	0.0092	0.0683	0.0683	0.0352	0.0188	8	0.0

TABLE XXXI (Continued). Walpole Island - ECC&P (pg/m^3)

CONCENTRATION										
1990	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
T4D	0.0498	0.0735	0.2115	n.d.	0.2115	0.2115	0.0593	0.0212	7	14.3
P5D	0.0500	0.0650	0.1887	n.d.	0.1887	0.1887	0.0736	0.0225	7	28.6
H6D	0.1065	0.0824	0.2311	n.d.	0.2311	0.2311	0.2043	0.0905	7	14.3
H7D	0.2858	0.1723	0.5370	0.0216	0.5370	0.5370	0.3786	0.3403	7	0.0
O8D	0.3916	0.1900	0.7270	0.0936	0.7270	0.7270	0.4345	0.4109	7	0.0
TOTD	0.8837	0.5425	1.895	0.1429	1.895	1.895	1.112	0.8472	7	0.0
T4F	0.2172	0.1045	0.3546	0.0246	0.3546	0.3546	0.2844	0.2289	7	0.0
P5F	0.1246	0.0530	0.1660	0.0179	0.1660	0.1660	0.1589	0.1472	7	0.0
H6F	0.1115	0.0688	0.2439	0.0246	0.2439	0.2439	0.1314	0.1006	7	0.0
H7F	0.0977	0.0341	0.1503	0.0339	0.1503	0.1503	0.1093	0.0971	7	0.0
O8F	0.0492	0.0218	0.0824	0.0205	0.0824	0.0824	0.0722	0.0487	7	0.0
TOTF	0.6002	0.2446	0.9881	0.1497	0.9881	0.9881	0.6428	0.6320	7	0.0
TOTDF	1.484	0.6721	2.527	0.2926	2.527	2.527	1.747	1.486	7	0.0
TOXIC EQUIVALENT										
	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
T4D	0.0025	0.0037	0.0106	n.d.	0.0106	0.0106	0.0030	0.0011	7	14.3
P5D	0.0025	0.0032	0.0094	n.d.	0.0094	0.0094	0.0037	0.0011	7	28.6
H6D	0.0032	0.0025	0.0069	n.d.	0.0069	0.0069	0.0061	0.0027	7	14.3
H7D	0.0014	0.0009	0.0027	0.0001	0.0027	0.0027	0.0019	0.0017	7	0.0
O8D	0.0004	0.0002	0.0007	0.0001	0.0007	0.0007	0.0004	0.0004	7	0.0
TOTD	0.0100	0.0097	0.0303	0.0014	0.0303	0.0303	0.0132	0.0069	7	0.0
T4F	0.0022	0.0010	0.0035	0.0002	0.0035	0.0035	0.0028	0.0023	7	0.0
P5F	0.0100	0.0042	0.0133	0.0014	0.0133	0.0133	0.0127	0.0118	7	0.0
H6F	0.0056	0.0034	0.0122	0.0012	0.0122	0.0122	0.0066	0.0050	7	0.0
H7F	0.0005	0.0002	0.0008	0.0002	0.0008	0.0008	0.0006	0.0005	7	0.0
O8F	0.0001	0.0000	0.0001	0.0000	0.0001	0.0001	0.0001	0.0001	7	0.0
TOTF	0.0183	0.0080	0.0291	0.0031	0.0291	0.0291	0.0226	0.0197	7	0.0
TOTDF	0.0283	0.0127	0.0449	0.0045	0.0449	0.0449	0.0372	0.0277	7	0.0

TABLE XXXI - (Continued). Walpole Island - ECC&P (pg/m^3)

CONCENTRATION										
1991	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
T4D	0.0143	0.0138	0.0431	n.d.	0.0431	0.0333	0.0252	0.0107	11	27.3
P5D	0.0171	0.0145	0.0444	n.d.	0.0444	0.0378	0.0291	0.0150	11	27.3
H6D	0.1094	0.1262	0.4350	n.d.	0.4350	0.2472	0.1316	0.0581	11	9.1
H7D	0.2924	0.2953	1.105	0.1038	1.105	0.5042	0.3594	0.1862	11	0.0
O8D	0.3496	0.3601	1.361	0.1079	1.361	0.4935	0.4847	0.2307	11	0.0
TOTD	0.7827	0.7877	2.943	0.2802	2.943	1.324	1.027	0.4665	11	0.0
T4F	0.2285	0.1700	0.6139	0.0553	0.6139	0.4524	0.3119	0.1817	11	0.0
P5F	0.0998	0.1161	0.3972	n.d.	0.3972	0.2249	0.1201	0.0506	11	9.1
H6F	0.0852	0.0775	0.2250	n.d.	0.2250	0.2002	0.1785	0.0602	11	9.1
H7F	0.0970	0.0870	0.2819	n.d.	0.2819	0.2175	0.1499	0.0738	11	9.1
O8F	0.0330	0.0270	0.1034	n.d.	0.1034	0.0514	0.0376	0.0294	11	18.2
TOTF	0.5434	0.4273	1.569	0.1329	1.569	0.8517	0.7803	0.4227	11	0.0
TOTDF	1.326	1.050	3.690	0.4131	3.690	2.893	1.450	0.9349	11	0.0
TOXIC EQUIVALENT										
	Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
T4D	0.0007	0.007	0.0021	n.d.	0.0021	0.0017	0.0013	0.0005	11	27.3
P5D	0.0008	0.0007	0.0022	n.d.	0.0022	0.0019	0.0015	0.0008	11	27.3
H6D	0.0033	0.0038	0.0130	n.d.	0.0130	0.0074	0.0039	0.0017	11	9.1
H7D	0.0015	0.0015	0.0055	0.0005	0.0055	0.0025	0.0018	0.0009	11	0.0
O8D	0.0004	0.0004	0.0014	0.0001	0.0014	0.0005	0.0005	0.0002	11	0.0
TOTD	0.0067	0.0063	0.0221	0.0020	0.0221	0.0148	0.0084	0.0030	11	0.0
T4F	0.0023	0.0017	0.0061	0.0006	0.0061	0.0045	0.0031	0.0018	11	0.0
P5F	0.0080	0.0093	0.0318	n.d.	0.0318	0.0180	0.0096	0.0040	11	9.1
H6F	0.0043	0.0039	0.0113	n.d.	0.0113	0.0100	0.0089	0.0030	11	9.1
H7F	0.0005	0.0004	0.0014	n.d.	0.0014	0.0011	0.0008	0.0004	11	9.1
O8F	0.0000	0.0000	0.0001	n.d.	0.0001	0.0001	0.0000	0.0000	11	18.2
TOTF	0.0150	0.0143	0.0506	0.0021	0.0506	0.0306	0.0166	0.0116	11	0.0
TOTDF	0.0217	0.0183	0.0654	0.0065	0.0654	0.0387	0.0368	0.0174	11	0.0

Table XXXII presents summary statistics from monitoring for dioxins and furans at two sites in Detroit. Toxic equivalencies have not been calculated for these two sites. Note the results from the Playground site for octa-dioxin (O8D) in 1989; the 95th percentile is higher than the maximum (shaded cells in the table). This problem occurs when a non-detect is reported with a very high detection limit: half the d.l. then is higher than the reported maximum concentration. Substituting 0.0 for non-detects circumvents this problem, however, for the monitoring effort in Detroit, it was the policy of Roy F. Weston Inc.to use half the d.l. for non-detect results. In this particular case, more useful information is provided by the 75th and 50th percentiles.

TABLE XXXII Dioxins and Furans: Detroit Playground Site - Weston (pg/m^3).

		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1988	2378D	Not Detected by Weston at This Site in 1988								12	100
	T4D	Not Detected by Weston at This Site in 1988								12	100
	P5D	Not Detected by Weston at This Site in 1988								12	100
	H6D			0.27	n.d.					12	≥80
	H7D			9.48	n.d.					12	≥80
	O8D	7.00	12.64	44.08	n.d.	44.08	21.68	5.93	1.45	12	<80
	2378F			13.71	n.d.					4	<80
	T4F			13.71	n.d.					12	≥80
	P5F			4.23	n.d.					12	≥80
	H6F			4.27	n.d.					12	≥80
	H7F			97.52	n.d.					12	≥80
	O8F			52.10	n.d.					12	≥80
1989	2378D	Not Detected by Weston at This Site in 1989								14	100
	T4D	Not Detected by Weston at This Site in 1989								14	100
	P5D	Not Detected by Weston at This Site in 1989								14	100
	H6D			3.18	n.d.					14	≥80
	H7D	1.36	2.65	10.46	n.d.	10.46	3.30	0.81	0.59	14	<80
	O8D	7.98	20.81	81.11	n.d.	82.11	12.45	3.43	0.91	14	<80
	2378F	0.31	0.35	1.49	n.d.	1.49	0.47	n.d.	n.d.	14	<80
	T4F	0.78	1.86	7.44	n.d.	7.44	0.79	n.d.	n.d.	14	<80
	P5F	1.03	2.08	8.39	n.d.	8.39	1.43	n.d.	n.d.	14	<80
	H6F	0.54	0.85	3.38	n.d.	3.38	1.07	0.67	n.d.	14	<80
	H7F	0.61	0.88	3.58	n.d.	3.58	0.99	0.67	n.d.	14	<80
	O8F			0.96	n.d.					14	≥80

c.l. is censoring level
for c.l. ≥ 80% only the maximum and minimum concentrations are reported
for c.l. < 80% all non-detects are replaced with half the d.l. before calculating statistics

TABLE XXXII (Continued). Detroit Playground Site - Weston (pg/m^3)

		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1990	2378D			6.94	n.d.					15	≥80
	T4D			6.94	n.d.					15	≥80
	P5D			0.95	n.d.					15	≥80
	H6D			2.24	n.d.					15	≥80
	H7D	Not Detected by Weston at This Site in 1990								15	100
	O8D	1.67	2.14	8.35	n.d.	8.35	4.03	2.37	n.d.	15	<80
	2378F			19.39	n.d.					15	≥80
	T4F			35.79	n.d.					15	≥80
	P5F			16.41	n.d.					15	≥80
	H6F			4.03	n.d.					15	≥80
	H7F	Not Detected by Weston at This Site in 1990								15	100
	O8F			8.35	n.d.					15	≥80

c.l. is censoring level
for c.l. ≥ 80% only the maximum and minimum concentrations are reported

TABLE XXXII (Continued). Detroit Background Site - Weston (pg/m^3)

		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1988	2378D	Not Detected by Weston at This Site in 1988								12	100
	T4D	Not Detected by Weston at This Site in 1988								12	100
	P5D	Not Detected by Weston at This Site in 1988								12	100
	H6D	Not Detected by Weston at This Site in 1988								12	100
	H7D	Not Detected by Weston at This Site in 1988								12	100
*	O8D			2.07	n.d.				n.d.	12	<80
	2378F	Not Detected by Weston at This Site in 1988								4	100
	T4F	Not Detected by Weston at This Site in 1988								12	100
	P5F	Not Detected by Weston at This Site in 1988								12	100
	H6F	Not Detected by Weston at This Site in 1988								12	100
	H7F			5.70	n.d.					12	≥80
	O8F			2.33	n.d.					12	≥80
1989	2378D	Not Detected by Weston at This Site in 1989								12	100
	T4D	Not Detected by Weston at This Site in 1989								12	100
	P5D			0.38	n.d.					12	≥80
	H6D			1.72	n.d.					12	≥80
	H7D			2.92	n.d.					12	≥80
*	O8D			3.92	n.d.				n.d.	12	<80
	2378F	Not Detected by Weston at This Site in 1989								12	100
	T4F	Not Detected by Weston at This Site in 1989								12	100
	P5F			1.86	n.d.					12	≥80
	H6F			3.71	n.d.					12	≥80
	H7F			1.72	n.d.					12	≥80
	O8F			1.46	n.d.					12	≥80

c.l. is censoring level
for c.l. ≥ 80% only the maximum and minimum concentrations are reported
* for c.l. < 80% only the maximum, minimum, and 50th percentile are reported due to the small sample size and large number of non-detects.

TABLE XXXII (Continued). Detroit Background Site - Weston (pg/m^3)

		Av	s.d.	Max	Min	95th	90th	75th	50th	n	c.l.
1990	2378D			1.57	n.d.					15	≥80
	T4D			1.57	n.d.					15	≥80
	P5D	Not Detected by Weston at This Site in 1990								15	100
	H6D	Not Detected by Weston at This Site in 1990								15	100
	H7D	Not Detected by Weston at This Site in 1990								15	100
	O8D			0.92	n.d.					15	≥80
	2378F	Not Detected by Weston at This Site in 1990								15	100
	T4F	Not Detected by Weston at This Site in 1990								15	100
	P5F	Not Detected by Weston at This Site in 1990								15	100
	H6F	Not Detected by Weston at This Site in 1990								15	100
	H7F	Not Detected by Weston at This Site in 1990								15	100
	O8F	Not Detected by Weston at This Site in 1990								15	100

c.l. is censoring level
for c.l. ≥ 80% only the maximum and minimum concentrations are reported

6 *Discussion*

6.1 Ambient Air Quality Criteria (AAQC)

Table XXXIII shows long-term statistics for all Windsor sites (MOEE and ECC&P and all years of available data) for the compounds of interest compared to existing ambient air quality criteria (AAQC) as defined in reference 23. For all compounds, the statistics are based on 24 hour samples and the 24 hour AAQC is shown. If a 24 h AAQC does not exist for a specific compound, an asterisk is placed in column three opposite that compound. Results for benzo(a)pyrene and for dioxins and furans are presented in Table XXXIV and are explained below.

Table XXXIII shows that ambient levels of the compounds of concern are mostly well below existing AAQC. For the volatile organic compounds even the maximum reported concentrations are far below the AAQC. The only two exceptions are ethylene dibromide and vinyl chloride. These two compounds were not detected more than 80% of the time, and at some sites in some years were not detected at all. In the table, only the maximum concentration is reported for these two compounds. The same is true for the metals: the maximum concentrations are about one order of magnitude or more lower than the AAQC. The exception is manganese for which the maximum concentration is a little more than half the existing AAQC.

Polychlorinated biphenyls are well below the AAQC and there are no ambient air quality criteria for chlorobenzenes or chlorophenols.

Note that many of these AAQC are being updated. The reader should refer to the Windsor Air Quality Study Health Effects Assessment[10] for a more detailed discussion of health implications in terms of risk analysis.

TABLE XXXIII Long-Term Monitoring Statistics Compared To 24 Hour Ambient Air Quality Criteria (AAQC).

Substance	Unit	AAQC	Mean	Max	Min	n
Benzene	$\mu g/m^3$	*	2.64	11.65	n.d.	440
Butadiene,1,3	$\mu g/m^3$	*	0.19	1.38	n.d.	441
Ethylene dibromide†	$\mu g/m^3$	3		0.50	n.d.	412
Dichlorobenzene,para	$\mu g/m^3$	*	0.89	14.60	n.d.	408
Ethylene dichloride	$\mu g/m^3$	400	0.08	2.27	n.d.	413
Methylene chloride	$\mu g/m^3$	1765	1.84	44.40	n.d.	386
Formaldehyde	$\mu g/m^3$	*	3.70	25.06	0.36	146
Perchloroethylene	$\mu g/m^3$	4000	0.73	5.60	n.d.	412
Carbon tetrachloride	$\mu g/m^3$	600	0.74	8.50	n.d.	413
Trichloroethylene	$\mu g/m^3$	28000	0.33	4.89	n.d.	413
Chloroform	$\mu g/m^3$	500	0.20	1.90	n.d.	412
Vinyl chloride†	$\mu g/m^3$	1		0.62	n.d.	412
Arsenic	$\mu g/m^3$	0.3	0.0014	0.0043	0.0003	54
Beryllium†	ng/m^3	10		0.14	n.d.	55
Cadmium	$\mu g/m^3$	2	0.0016	0.091	n.d.	2840
Chromium	$\mu g/m^3$	1.5	0.006	0.140	n.d.	2838
Lead	$\mu g/m^3$	5	0.040	0.340	n.d.	3181
Manganese	$\mu g/m^3$	2.5	0.072	1.35	n.d.	2841
Nickel	$\mu g/m^3$	2	0.004	0.35	n.d.	2839
Polychlorinated Biphenyls	ng/m^3	150	0.41	3.30	n.d.	137
Chlorobenzenes	ng/m^3	*	1.92	15.72	n.d.	137
Chlorophenols	ng/m^3	*	2.36	12.18	n.d.	77
Total PAH[1]	ng/m^3	*	23.22	225.8	0.85	337

* AAQC is either unavailable or under development
† Substance not detected more than 80% of the time.
1 ECC&P target list compounds and data only.

Table XXXIV shows results for benzo(a)pyrene (B(a)P) and total dioxins and furans. B(a)P has been separated because the AAQC is an annual number and it does not make sense to compare 24 h statistics with annual ambient air quality criteria. Because an entire year of data is required before an annual mean can be generated, "n", in this case, represents number of years of data. For dioxins and furans, an Interim AAQC expressed as pg TEQ/m^3 is available. The method of calculation has already been explained in § 5.5. As with Table XXXIII, results are calculated using all available data from all Windsor sites from both MOEE and ECC&P.

For benzo(a)pyrene, the statistical calculations are straightforward and the results presented are concentrations in ng/m^3. Note that the Mean is the mean of the annual means; the Max is the maximum annual mean; and the Min is the minimum annual mean. The long-term, multi-site mean-of-the-annual-means is almost twice the annual AAQC of 0.3 ng/m^3. For five out of the six years of data the annual mean B(a)P concentration is higher than the annual AAQC. The maximum annual mean of 0.82 ng/m^3 occurred in 1988 and the minimum annual mean of 0.18 ng/m^3 occurred in 1992.

For total dioxins and furans the results are presented as Toxicity Equivalents in pg/m^3. The Interim AAQC is 5 pg TEQ/m^3. The Mean is the mean of the TEQ calculated from samples collected between 1989 and 1992; the Max is the maximum of the calculated TEQ; and the Min is the minimum of the calculated TEQ. The mean TEQ of 0.228 pg/m^3 is almost 22 times lower than the Interim AAQC and the maximum TEQ of 1.732 pg/m^3 is almost 3 times lower than the Interim AAQC. The minimum calculated TEQ is over 400 times lower than the IAAQC.

TABLE XXXIV Long-Term Monitoring Statistics Compared To Annual Ambient Air Quality Criteria (AAAQC) (B(a)P) or Interim AAQC (IAAQC) (PCDD/F).

Substance	Unit	AAQC or IAAQC	Mean	Max	Min	n
Benzo(a)pyrene	ng/m^3	0.3	0.56	0.82	0.18	6
Dioxins & Furans	pg TEQ/m^3	5	0.228	1.732	0.012	106

6.2 Windsor Results Compared With Other Urban Areas

The results presented in this report are fully interpreted elsewhere[10], however, it is useful to compare annual averages for a subset of the target compound list to other urban areas both in Ontario and across Canada. The subset of the target compound list was selected based on the emissions inventory work, the modelling work, and the risk analysis work. The subset includes benzene, 1,3-butadiene, benzo(a)pyrene, cadmium, chromium, and formaldehyde. Also selected were some substances not easily evaluated by risk analysis but that are persistent and toxic; the VOC carbon tetrachloride and para-dichlorobenzene, and dioxins and furans.

In Figures 2 through 10 a range of annual average concentrations is shown with a bar. In some cases averages included in the range have been calculated from partial years of data. Points show a single annual average for sites where there are not enough data to show a range. Data from both MOEE and ECC&P have been used. The Windsor sampling locations are shown in Figure 1. For Hamilton, the sites are as follows: Mtn - Mountain; DnTn - Downtown; and Beach - Beach Boulevard. In Figures 2 through 10 sites outside the province of Ontario are presented below the solid black bar.

Figure 2 shows results for benzene. Rural sites and urban sites with minimal traffic influence are near the low end of the concentration range. Downtown urban areas show higher concentrations of benzene. Note the Beach Boulevard site in Hamilton. This site is located under the Skyway and downwind from Hamilton's heavy industry area, however, the result presented is for only six months of data. Continued sampling should show whether or not this short term result is sustained over longer-term monitoring. The Vancouver 1 site is near a bulk petroleum facility.

Results for 1,3-butadiene are shown in Figure 3. The range for site 12007 in Windsor includes 0.0 because this compound was not detected at all one year. For 1,3-butadiene there is a less obvious pattern of higher concentrations in urban areas and lower in rural locations. However, all results are very close to instrumental detection limits and the data summarized in Figure 3 include many non-detect results.

Figure 4 shows results for benzo(a)pyrene. Site 12007 in Windsor is immediately opposite Zug Island, Detroit. Heavy industry in this area includes two steel mills, at least one foundry (associated with the automotive industry), a cement plant, a chemical plant, bulk petroleum storage tanks, power plants, a sewage treatment plant, and a variety of other industries. The only other Ontario location with long-term monitoring showing a range of annual averages greater than one is Hamilton. The Hamilton site is not downwind from the steel mills except during infrequent wind conditions, however, this may be often enough to contribute to

the higher range seen in this city.

Figure 5 shows results for cadmium and Figure 6 shows results for chromium. These figures are based on inhalable particulate results provided by ECC&P. Only Environment Canada data have been used so that the comparison to other urban sites in Canada will be consistent with respect to sampling and analytical methodologies. The ranges of means provided by ECC&P are calculated using half the detection limit for non-detect results. Means are only calculated for sites with more than 24 samples in one year and at least 5 samples in each quarter. For cadmium, the ranges of means from two sites in Windsor are comparable to ranges of means reported for other sites in Canada. For chromium, site #12016 shows a range similar to Toronto but the upper end of the range is lower than the upper end of the range in Montreal, Edmonton, Calgary, and Vancouver.

Formaldehyde is measured by ECC&P at only a very few sites. Figure 7 shows results for two sites in Windsor, and one site in each of Toronto, Ottawa, Montreal, and Vancouver. The range of annual averages is quite small, between about 2 and 4 $\mu g/m^3$. The exception is site 12016 in Windsor, however, this result is based on a partial year of monitoring and may not be representative of longer-term sampling.

Figure 8 shows ranges of annual averages for carbon tetrachloride. At site 12007 in Windsor carbon tetrachloride was not detected at all one year (an analytical detection limit problems is suspected) and so the range of annual averages includes zero. Note also two Hamilton sites: on the mountain, carbon tetrachloride was never detected while at the Beach Boulevard site the average is about five times higher than anywhere else. Remember, though, that this number is based on only six months of data. Carbon tetrachloride has a very long residence time in the atmosphere and hence global "background" concentrations are approximately 0.8 $\mu g/m^3$. With few exceptions annual averages in the province of Ontario are very close to this value.

The final VOC in this subset of compounds is para-dichlorobenzene. Results are shown in Figure 9. Note the wide range of annual averages for site 12008 in Windsor, Walpole Island, and Toronto. No explanation is available at this time.

Finally, results for total dioxin plus total furan are shown in Figure 10. Results shown are concentrations and are not directly comparable to the IAAQC in Table XXXIV. The annual averages from Smooth Rock Falls and Marathon are from one year of monitoring near the pulp mills located in these two communities. Although the ranges of annual averages are higher in Windsor it should be noted that the other Ontario communities where dioxins and furans have been measured are not urban centres. On specific days under certain meteorological conditions, the municipal incinerator in Detroit has been implicated in higher concentrations of dioxins and

furans in Windsor[16]. However, the concentrations reported here are well below the IAAQC as discussed earlier in section 6.1, and are comparable to results reported from other monitoring efforts in the United States[24,25]. The detailed meteorological analysis of reference 16 has not yet been carried out for the data in this report.

As well as showing the ranges of annual average concentrations across Ontario, Figures 2 through 7 also show the ranges of annual average concentrations within Windsor. Figure 2 shows similar benzene concentrations in West Windsor (12007), South Windsor (12056), and East Windsor (12057). Annual concentrations at the downtown site (12008) are higher which is consistent with heavier traffic influence at this site. Site 12016 exhibits a narrow range of annual averages somewhat lower than those at site 12008. This pattern is generally consistent for 1,3-butadiene, carbon tetrachloride, and 1,4-dichlorobenzene.

For benzo(a)pyrene (Fig. 4), the West Windsor site (12007) shows the largest range of annual average concentrations and the highest annual average concentration. Coke ovens across the river from this site were operating for a portion of the Windsor Air Quality Study and were shut down for a portion of the study and this fact may contribute, in part, to the wide range of annual averages measured at site 12007. Ranges of annual average concentrations at site 12016 and the downtown site (12008) are quite similar. Annual average concentrations at the south and east Windsor sites are similar to each other but lower than concentrations at 12016 and 12008 by about half.

Cadmium, chromium, and formaldehyde were only measured at two Windsor sites. For cadmium, the main downtown site in Windsor (#12008) exhibits a larger range of annual means than is found at site #12016. For chromium, this pattern is reversed. For formaldehyde, the annual concentration at site 12016 was almost twice that of site 12008. When formaldehyde data from 1992 and 1993 become available from ECC&P it will be possible to determine if concentrations at site 12016 are consistently higher than those at site 12008.

Annual average concentrations of total dioxins plus total furans in East Windsor (12057) are about one-third lower than those at site 12016. Concentrations at site 12008 show a large range. The low end of the range is similar to site 12057 and the high end of the range is about three times higher than site 12057 and just over two times higher than site 12016.

Generally, ambient air concentrations in East and South Windsor are at the low end of the range of concentrations measured at sites in the downtown area and further west. A detailed meteorological analysis of both high and low concentration days is planned for the future.

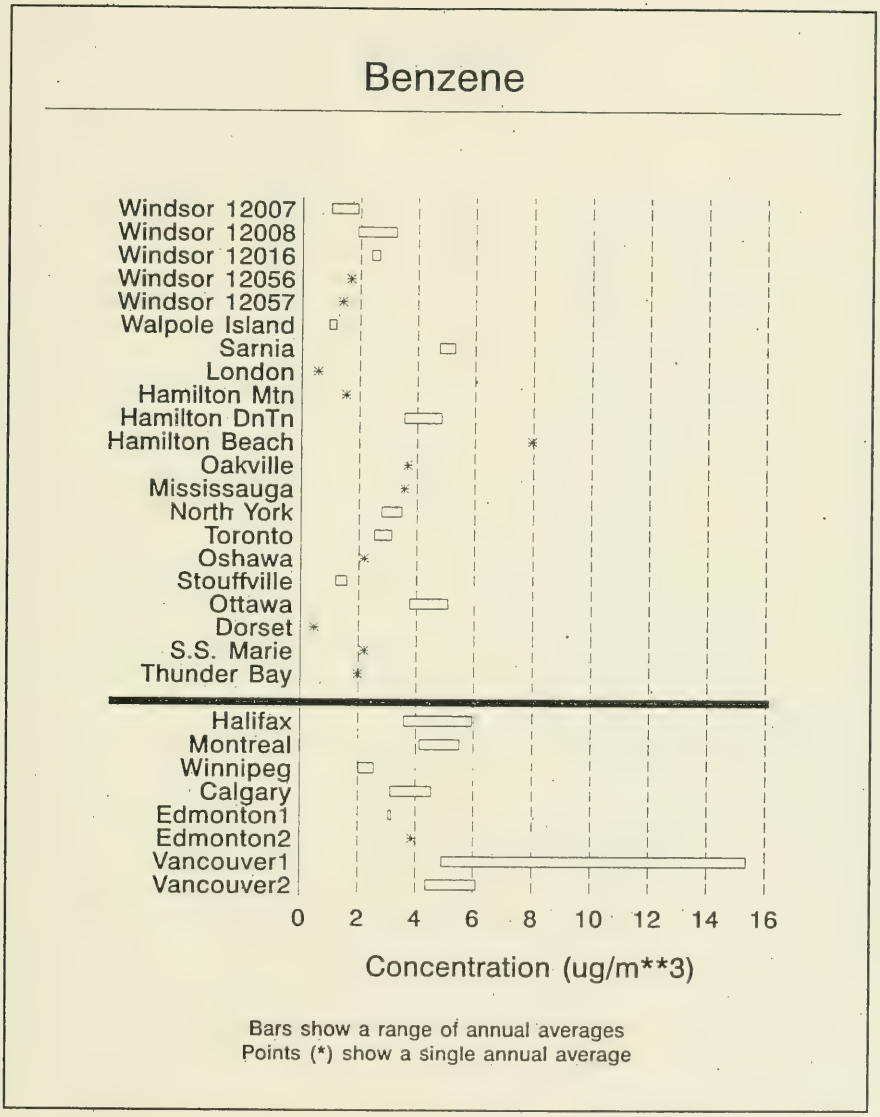

FIGURE 2 Range of Annual Averages of Benzene Concentrations in Ontario and Canada

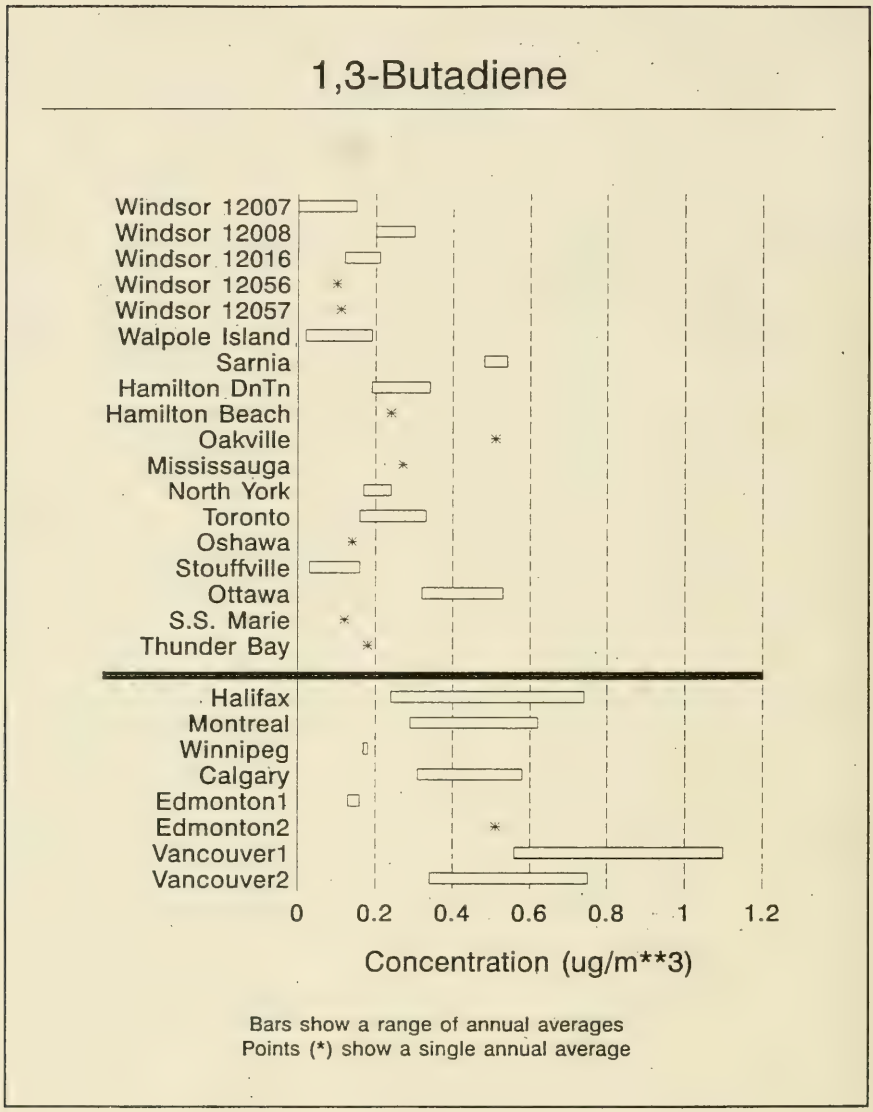

FIGURE 3 Range of Annual Averages of 1,3-Butadiene Concentrations in Ontario and Canada

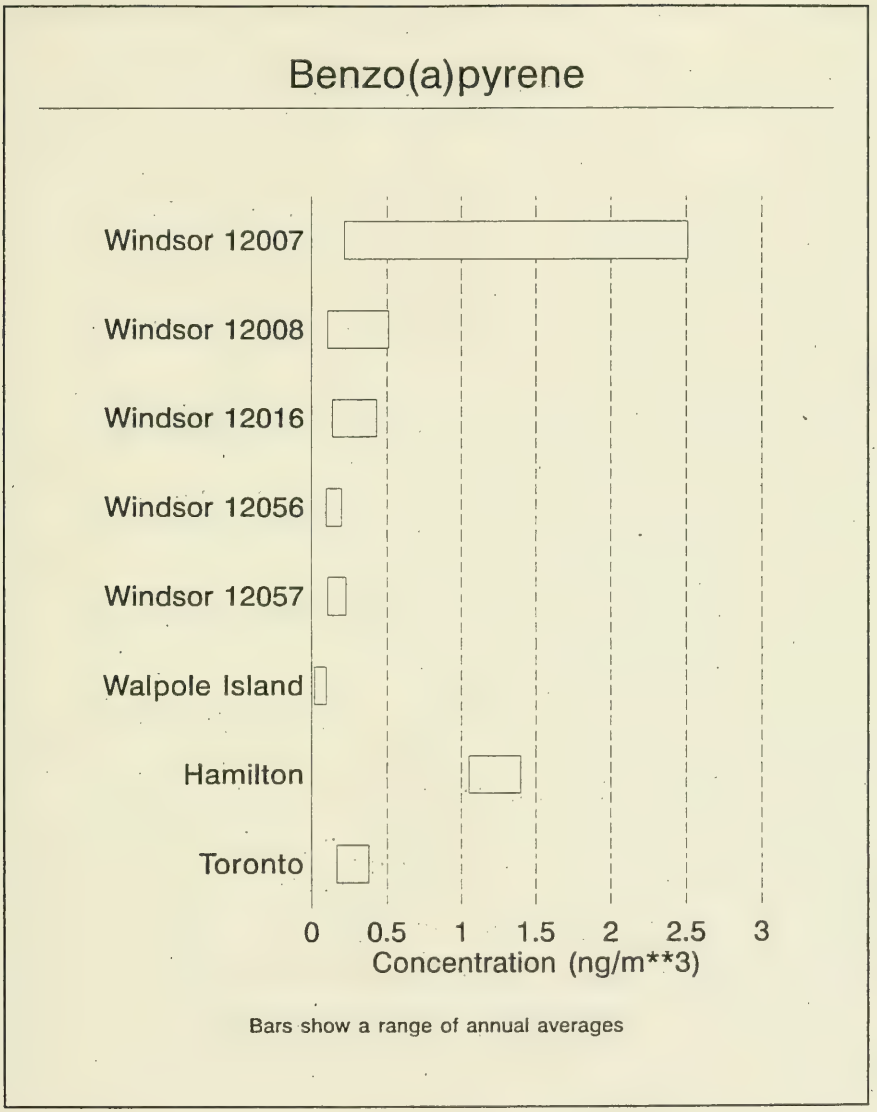

FIGURE 4 Range of Annual Averages of Benzo(a)Pyrene Concentrations in Ontario and Canada

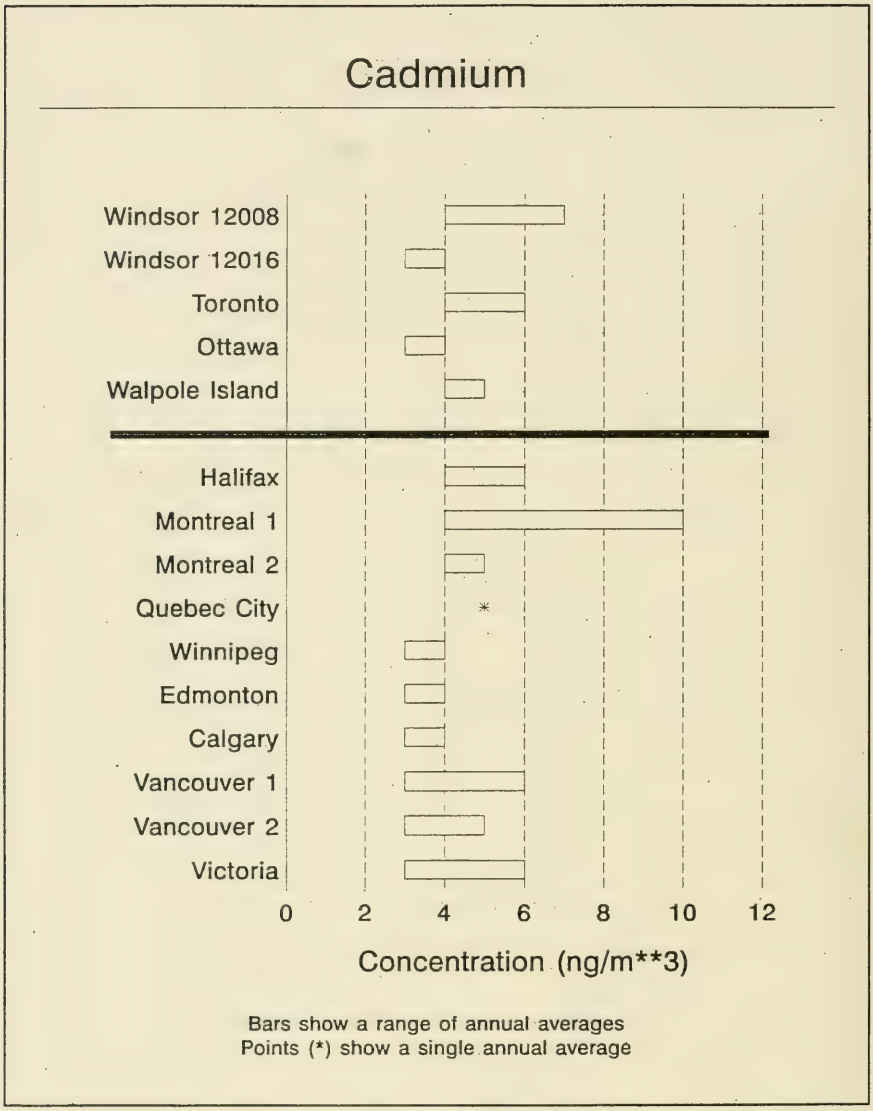

FIGURE 5 Range of Annual Averages of Cadmium Concentrations in Ontario and Canada

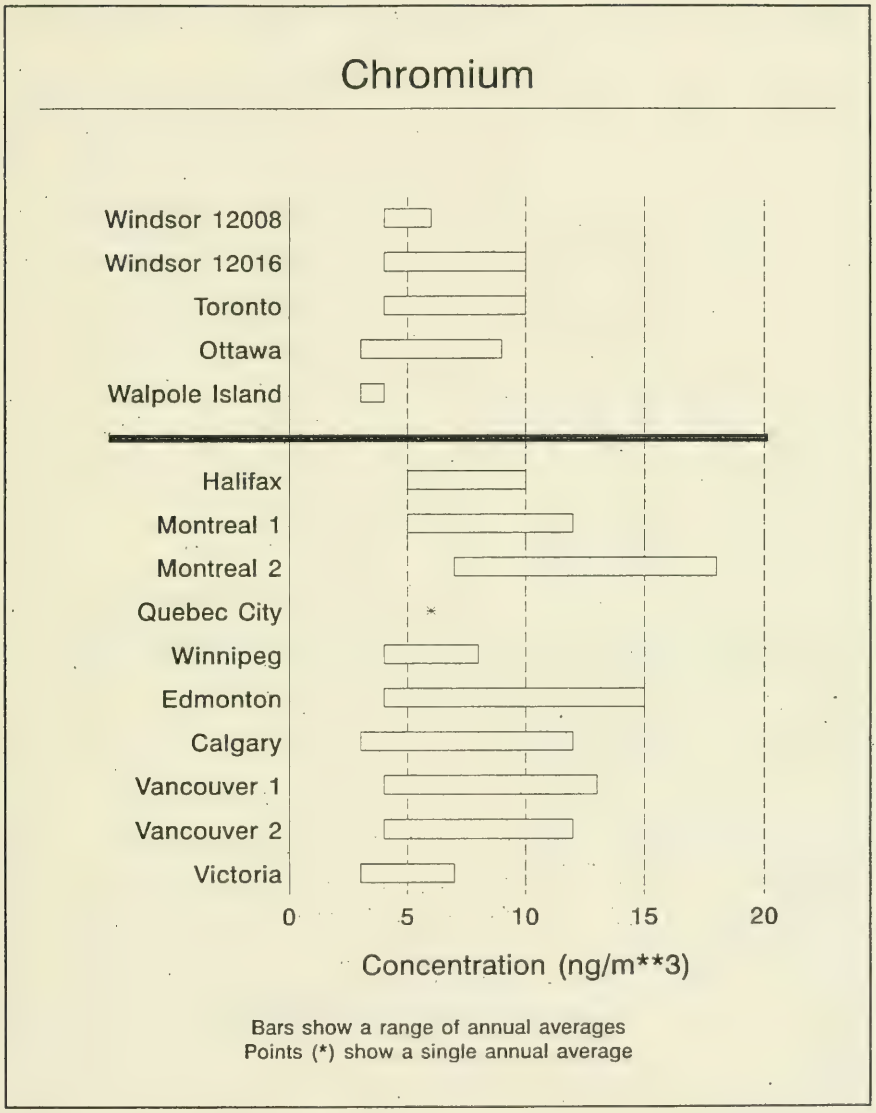

FIGURE 6 Range of Annual Averages of Chromium Concentrations in Ontario and Canada

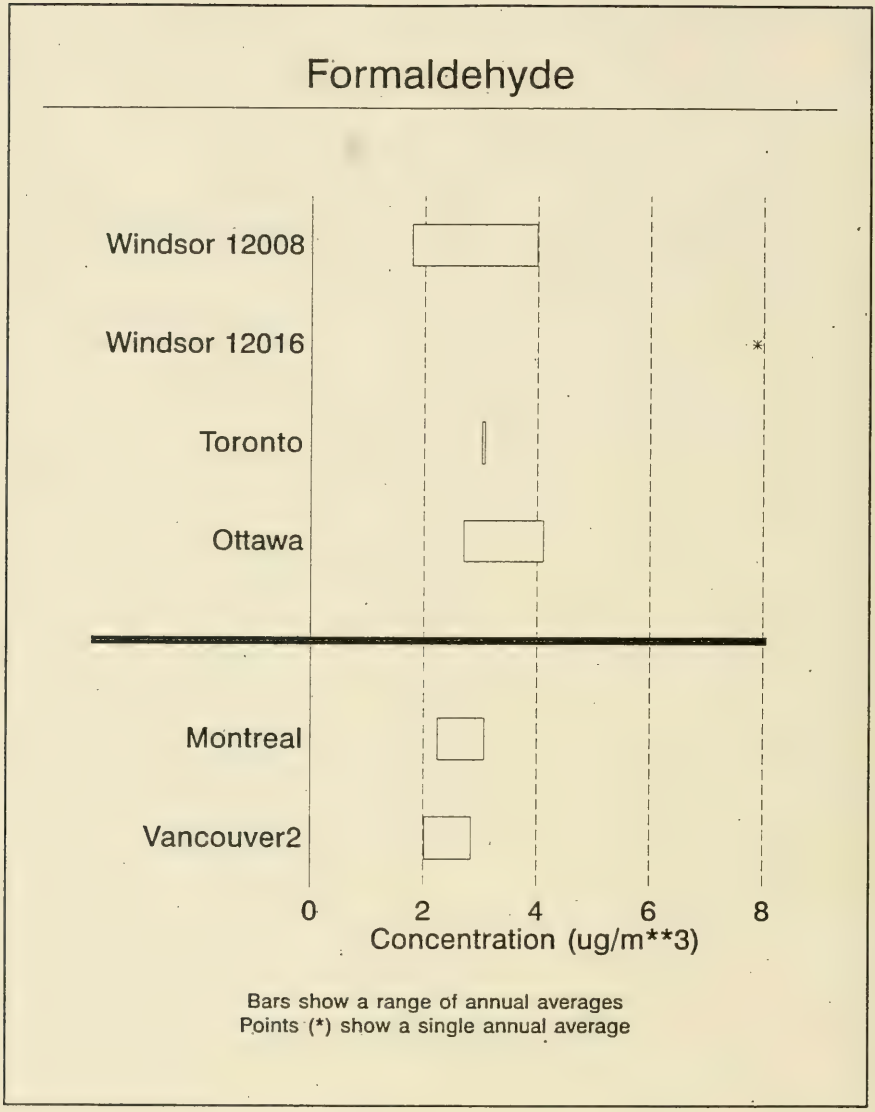

FIGURE 7 Range of Annual Averages of Formaldehyde Concentrations in Ontario and Canada

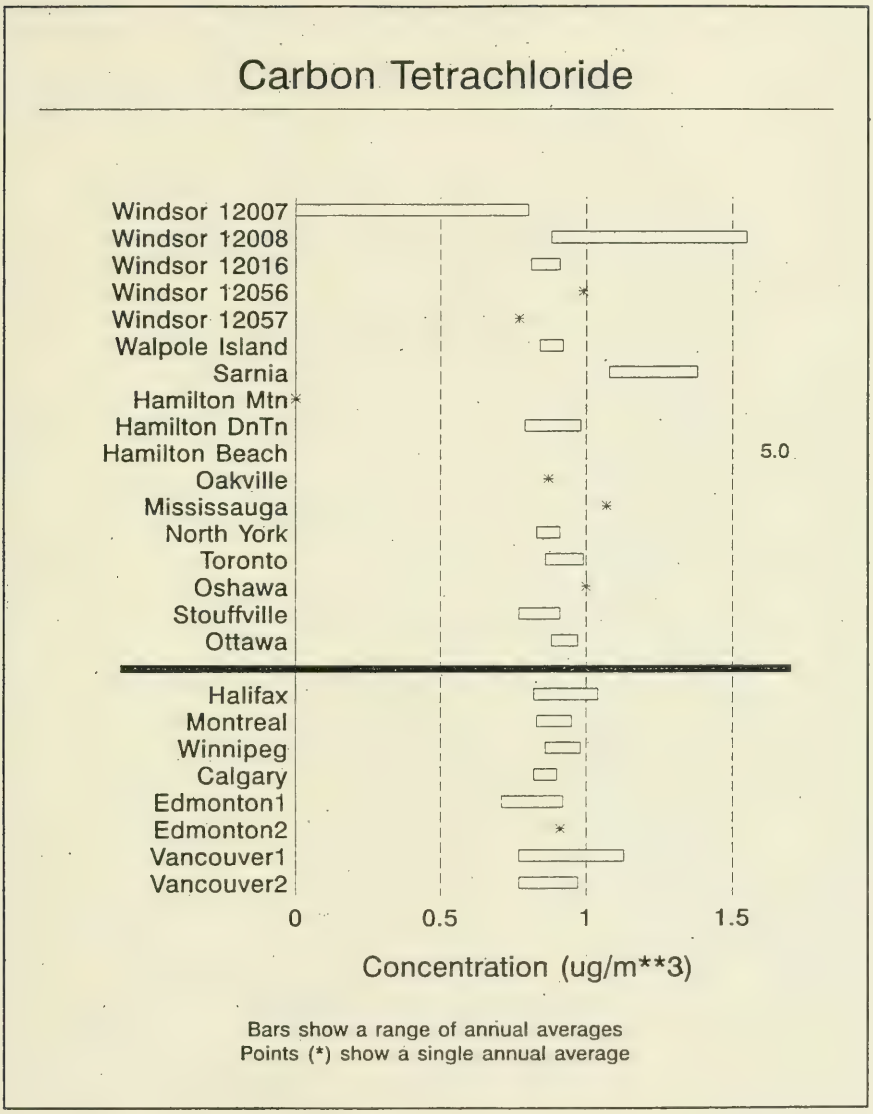

FIGURE 8 Range of Annual Averages of Carbon Tetrachloride Concentrations in Ontario and Canada

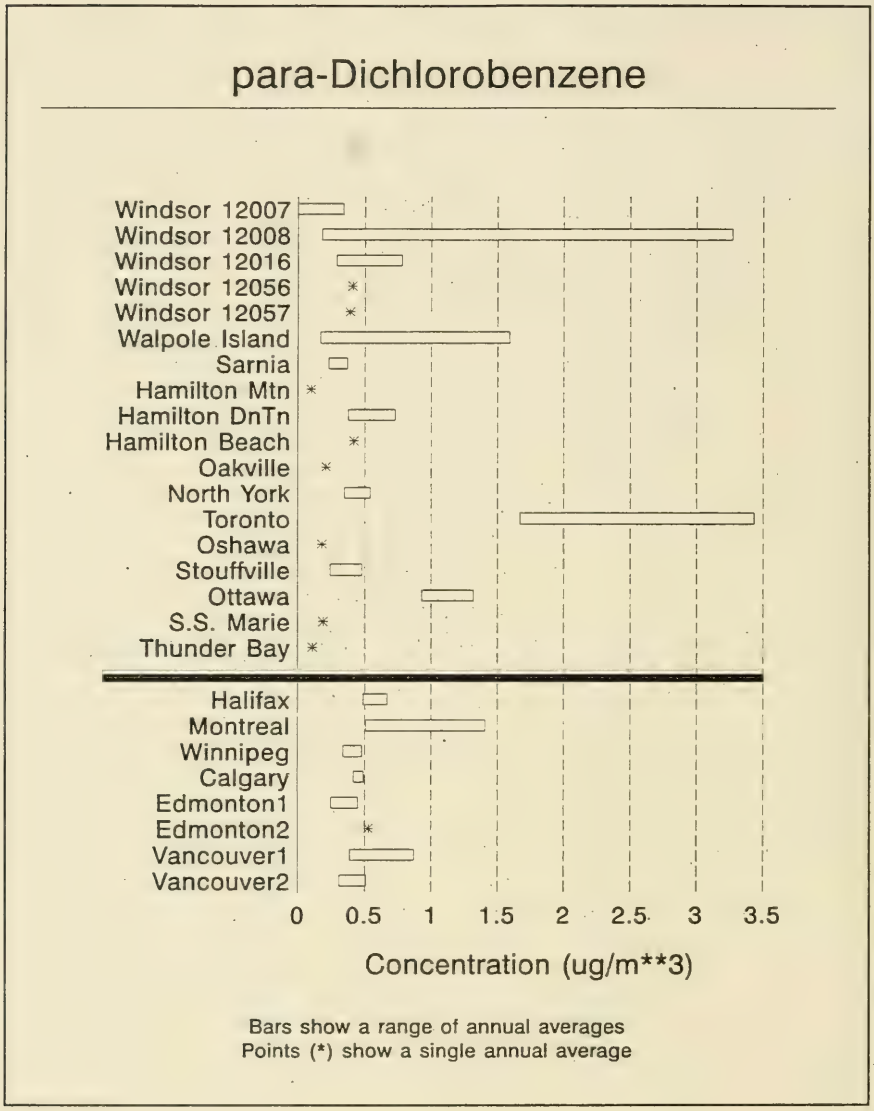

FIGURE 9 Range of Annual Averages of para-Dichlorobenzene Concentrations in Ontario and Canada

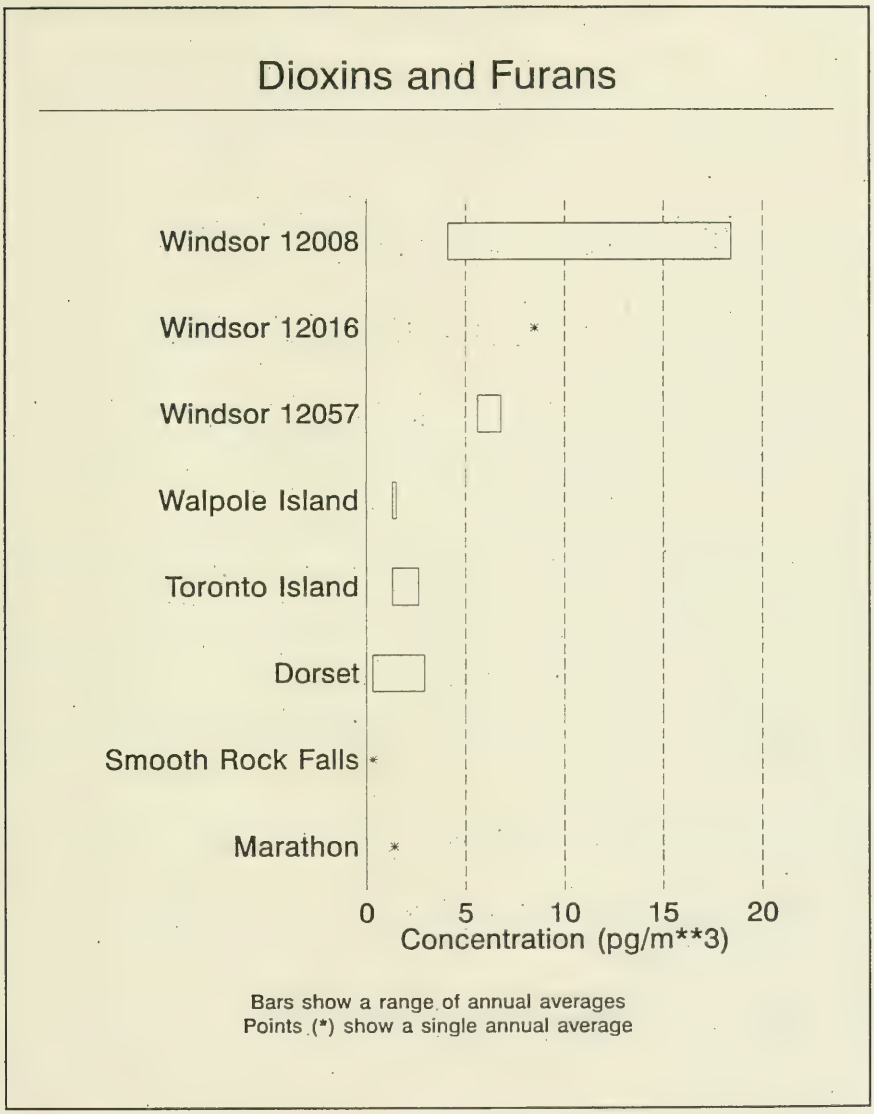

FIGURE 10 Range of Annual Averages of Total Dioxin Plus Total Furan Concentrations in Ontario

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